THE VETERINARY RECORD

A Weekly Journal for the Profession.

EDITED BY WILLIAM HUNTING, F.R.C.V.S.

No. 1164. OCTOBER 27, 1910 VOL. XXIII.

AN ARMY VETERINARY REPORT.

This week we are able to publish the first portion of an old Army Veterinary Report which is full of interest and instruction, and we anticipate that its succeeding instalments will be found no less so. More than thirty years have passed since the Zulu war, but its veterinary history conveys lessons which remained almost unknown for many years afterwards, and are even now not fully appreciated. Much of the waste of horseflesh which marked the South African war of 1899-1901, might have been averted had the knowledge contained in the present report been generally accessible to the profession. We hope to refer further to this document when we publish its final instalment about three weeks hence.

THE DIRECTOR-GENERAL, A.V.S.

Colonel Robert Pringle, C.B., D.S.O., was gazetted as Director-General of the Army Veterinary Service at the end of last week, and thus takes the rank of Major-General. All will congratulate Major-Genl. Pringle upon adding the chief prize of a military veterinary surgeon's life to his other distinctions; but, while welcoming him, we must all feel keen regret at the retirement of his predecessor, Major-Genl. Smith.

Of Major-Gen. Smith's military career we say little. His value to the Service was proved by his accession to the Director-Generalship, and it is generally recognised that much, if not most, of the recent improvement in standard of the A. V. S. has been due to his influence. But that influence has not been confined within the bounds of the Army. No man has worked harder for the profession than Major-Gen. Smith, and scarcely one has produced a more valuable sum of work. Himself, perhaps, the most remarkable combination of the expert physiologist and the practical clinician that the profession in this country has ever possessed, he has given us valuable original work; and it is scarcely possible to overestimate his influence upon the younger generation of veterinary surgeons in the direction of grafting scientific thought and reasoning upon every-day clinical work. He passes into his well-earned retirement bearing the good wishes of all who value a life-work of conscientious endeavour; and we may perhaps hope that the pen which has contributed so much to our advancement in past and busy years will contribute still in future and more leisure ones.

EFFECT OF SHOEING ON HORSE'S ACTION.

By W. HUNTING, F.R.C.V.S.

Can we by altering the level of the shoe, or unequally distributing weight at heel, toe, or side, modify the action of a horse in a definite manner?

In U.S.A, there is a widespread belief that by toe-weights and side-weights quite a definite change can be made in the horse's action, and errors of gait corrected. Here in Great Britain there is a sort of empirical notion that certain curiously formed shoes prevent or cure "cutting" by altering the gait of the animal.

Personally I have very little belief in these theories, because I have seen "cutting" cease after totally different shaped shoes have been applied, and have seen it continue in spite of the most exaggerated alterations of the shoe.

I have no experience of the U.S.A. toe-weights, but I know that the author of the most important book on the subject, when it reached a second edition, confessed that the longer he lived the less he believed in the effects of weights.

Although hundreds of these contrivances have been used on thousands of horses, they have been used without knowledge, without observation, and without any controls, such as are necessary for a real, exact experiment. Such experiments properly conducted would be valuable but costly.

I have just found three experiments made by Moorcroft a century ago. They are reported in a pamphlet on horse-shoeing, and so far as I know are unique.

I do not offer them as settling anything, for all exact work requires corroboration before it can be accepted. I republish them solely because I know of no other similar experiments, and because Moorcroft may perhaps stimulate some one to repeat or even improve upon his effort;

"In order to ascertain what would happen to a horse shod with different kinds of shoes, the following trials were made.

EXPERIMENT I.

A horse with a narrow chest, who had never cut, and having parallel shoes on his fore feet, was trotted at about the rate of eight miles an hour in a straight line, over ground sufficiently soft to retain slightly the impressions of the shoes, but not to admit the feet to sink into it.

Two parallel lines were drawn along the track, including between them the prints of the shoes. By these it was found that there was regularly a distance of nine inches and a half between the

outer edge of the near fore shore, and that of the off fore shoe.

EXPERIMENT II.

Shoes thick in their inner quarter, and like a tip, reaching only half-way on the outer quarter, were then used, and it appeared that the distance between the onter edges of the prints of the shoes, taken as before, was regularly reduced to eight inches and a half.

EXPERIMENT III.

The same shoes were afterwards placed on the opposite feet, so that the thick heel was on the outer quarter; and the result, under circumstances exactly the same as in the foregoing experiments was, that the distance between the outer edges of the prints of the shoes was regularly increased to eleven inches.

To account for these results, it is necessary to attend closely to the different effects produced by the weight of the fore part of the body acting upon the two fore feet, when raised on the inner or outer quarters, during the opposite states of rest and action. And first, with regard to shoes raised on the inner quarter; whilst a horse so shod is standing still the fetlock joints are certainly thrown farther apart than when any other kind of shoe is used. Hence, it was concluded, that the limb which supported the body would have its fetlock joint thrown so much outwards, as to keep it completely out of the way of the foot in motion. But it appears that the impressions made on the ground by such shoes are an inch nearer together than those made by parallel shoes, and two inches nearer together than than those made by shoes raised on the outer quarter. And this may be thus explained; when the horse is at rest, the weight is supported equally by the two fore feet, but the instant one foot quits the ground the weight is suddenly transferred to the other; and by the outer quarter being lower than the opposite one, the fore part of the horse has a teudency to fall over to the outside. To prevent this, the moving foot is suddenly brought close to the fetlock of the supporting foot, in order to relieve it by catching the weight, and the foot itself is placed on the ground, too much under the middle of the breast. The same circumstance occurs to both feet in their turn. And the horse being thus in constant danger of falling to one side or to the other, is constrained to bring his feet near together to preserve his balance, and in doing this strikes the foot against the opposite fetlock.

It frequently happens that the more the toes are turned outwards the nearer the fetlock joints are brought together, and the more the horse is disposed to cut. However, this is true only to a certain extent; for if this faulty position of the lower part of the leg be carried artificially beyond a given point, instead of producing an increased degree of cutting, in most instances it remedies the defect altogether. The reason of this is just the reverse of what takes place when the inner quarter is raised; that is to say, when the weight of the fore part of the body rests only upon one leg, it bears too much upon the inner quarter, from its being lower than the outer quarter; and thus the horse has a tendency to fall over to the inside of the supporting leg.

To prevent this, the moving foot is thrown farther from the supporting leg in order to maintain the balance; and thus the foot misses the fetlock joint."

ABSTRACTS FROM FOREIGN JOURNALS.

HERNIA INTERNA ABDOMINALIS ("GUT-TIE") IN OXEN.

Ludwig Mayr, of Oberhausen-bei-Augsburg, has had a somewhat extensive experience of this affection in oxen of from three months to three years and-a-half old. Of the cases treated by him during a period of four years, 23% were of animals not over one-year-old; and 16% of this 23% were under six months old. The great majority of the cases were between the ages of 1½ to 3½ years.

Mayr's experience embraces two distinct conditions. One is that generally recognised in English text-books as "gut-tie"—viz., a strangulation of the intestine by the remains of the spermatic cord becoming encircled round either a portion of the colon or a loop of the small intestine, and occluding the lumen of the gut. The other and more frequent one is strangulation by the passage of the colon or a loop of small intestine through a slit-like opening in the peritoneum of the spermatic cord. It is certain that the condition is caused by injudicious castration (German veterinarians are accustomed to trace "gut-tie" to the method of castration by traction—Transl.), which may either cause laceration of the peritoneum of the spermatic cord or, if the testicle is violently drawn downwards, rupture and subsequent jerking backwards into the abdominal cavity of the cord itself.

In all Mayr's cases the lesion has been situated upon the right side. This is easily explicable by the fact that the intestines lie in the right side of the abdominal cavity, being forced thither by the rumen lying to the left.

The great majority of Mayr's cases came under treatment on the second day of the illness; a few did so on the third day; and one case only on the fourth day. The prognosis is good when the affection is of not more than two day's standing, but in all cases is dependent upon whether symptoms of peritonitis are present, and how far, if present, they have progressed.

The *symptoms* of gut-tie are very characteristic. The animals refuse food, and lie a great deal. Rumination is completely suppressed in the advanced stages of the affection, while in the early stages feeble peristalsis of the rumen can still be demonstrated. In many cases the abdomen seems tympanitic; which is due to the collection of gas in the upper third of the rumen, resembling what is seen in peritonitis. The animals lose their spirits, and the general condition is markedly disturbed. In many cases there is well-marked protrusion of the eye-balls, and the sclerotic and con-

junctival vessels present appearances indicative of passive hyperæmia. In the early stages the animals show symptoms of colic, striking the abdomen with the hind feet at first violently, but less violently later. They also show constant rectal straining (especially after manual exploration of the rectum) without resultant defæcation. In the beginning of the affection such fæcal matter as is present behind the strangulation is evacuated; afterwards defæcation becomes more scanty, until finally only mucus in more or less quantity, and not uncommonly mixed with blood, is pressed out. One symptom accompanying this constant tenesmus without defæcation is that the sphincter ani contracts irregularly, not becoming completely closed, and thereby allowing the penetration of air into the rectum.

In advanced stages of the affection, and especially when peritonitis is commencing, the respiration is accelerated and the pulse is small and increased in frequency.

In many cases the right abdominal wall is sensitive to pressure. A further diagnostic symptom of great value is yielded by rectal exploration, which reveals the presence of a swelling varying, from the size of a billiard ball to that of a child's head, near to the right abdominal wall. This swelling seems upon palpation to be "tied off," and gives the impression of being filled with gas. Its position varies somewhat. but in many cases it is situated closely in front of the os pubis on the right side; it represents, of course, the incarcerated portion of intestine. In that form of the affection in which the remains of the spermatic cord have become twisted round the intestine, this characteristic tumour is found in a lower situation, in the neighbourhood of the right inguinal ring.

Discussing the question of differential diagnosis, the author remarks that *invagination* of the intestine is very rare in bullocks. Up to the present, he has only seen it in cows, and *especially* in cows advanced in pregnancy. Intestinal incarcerations from other causes, and possibly other conditions, may lead to confusion with gut-tie, but in general the author thinks that the diagnosis should be easy after some experience. The history, the course of the affection, and the characteristic intra-abdominal swelling exclude the possibility of error if taken together.

Various methods are recommended for the *treatment* of gut-tie. One preliminary measure mentioned in surgical text-books is to place the animal with the hind-quarters raised, or to lead or drive him down a hill. The author has tried this method, but has never seen good results follow; and he holds that only two methods of treating gut-tie are reliable, viz., (1) Manipulation of the incarceration through the walls of the rectum, and (2) laparotomy.

Rectal manipulation is well-known—in the neighbourhood of Württemberg, for instance, it has been practised by unqualified men for some decades at least. Its procedure of course varies somewhat with the nature of the lesion, which may, as above stated, be either an incarceration of a portion of intestine in a rent of the peritoneum of the spermatic cord, or a constriction of the intestine by the stump of the spermatic cord having become twisted round it. In the former case, again, different operators recommend different methods. The method of taxis through the rectum has been recommended by Reichert, but the author has never succeeded with it. His own method, by which he has always succeeded in reducing the incarceration, is a modification of Schenk's, and is performed as follows.

The oiled right hand is carefully introduced and passed along the ventral wall of the rectum till the incarceration is reached. The forefinger by a turning movement to the right, is then hooked half round or wholly round the constricting band of peritoneum; care being taken, in effecting this, to avoid any stretching of the mucous membrane of the rectum. The spermatic cord is then carefully drawn backwards towards the pelvis by at first slight and then gradually increasing traction. Generally it ruptures when the hand has arrived about the middle of the pelvis, releasing the incarcerated bowel. Generally, at the moment the rupture takes place, flatus (especially marked in large animals) is passed; the incarcerated portion of intestine escapes from the operating finger and falls downwards; and the previously existing diagnostic swelling disappears.

This method succeeds easily in animals of from a year to eighteen months old, but is more difficult in older subjects on account of the greater development of the spermatic cord. The duration of the manipulation before success is attained has varied, in the author's fairly extensive experience, from five minutes to half an hour.

As regards after treatment, the author gives a single disinfectant clyster at body heat, and also administers small doses of dilute hydrochloric acid and tincture of veratrum three times daily by the mouth. The latter measure is for the purpose of stimulating the appetite and rumination.

In the second form of the affection, viz., where the stump of the spermatic cord is encircling and strangulating the intestine—the author's procedure is very similar to that just described. In this variety of gut-tie, however, some practice and dexterity are necessary in order to seize the spermatic cord, which is generally fairly tensely applied round the intestine, in such a manner as to ensure success. In every case, also, great care to avoid injury to the rectal mucous membrane is necessary. The operator attempts, by means of careful boring movements, to insert the curved fore-finger of the right hand between the imprisoned coil of intestine and the spermatic cord encircling it. If successful in doing this, he then draws the cord backwards until release of the incarceration is attained. Success is made evident by the fact that the spermatic cord yields to traction, and the coil of intestine falls downwards.

Laparotomy is well borne by oxen; and the author has been very successful with it. He is accustomed to perform it in the standing position. Two strong iron hooks are driven into a wall, and a stout rope attached to each. The ropes are passed under the thorax and abdomen of the animal

(which are previously well padded with sacks) and the free ends of the ropes are then entrusted to strong men, who thus sustain the animal on his feet.

The technique of the operation is simple. An area of about 5½ inches long and 3 inches broad is shaved and disinfected on the right flank, about a hand's breadth below the angle of the ileum. In this area an incision through the skin is made, following the direction of the external oblique muscle, and about 4 to 4 4-5th inches long. The separate muscles are then carefully cut through one by one till the peritoneum is reached. The peritoneum is slightly incised, penetrated, and the peritoneal opening is then further enlarged with the finger. The disinfected left hand is then introduced into the abdomen in search of the strangulation. This is not difficult to find, the characteristic swelling aiding in its recognition.

The constricting band is then simply divided. Most operators use a bistourie caché or other special instrument for the purpose; the author, however, prefers an ordinary pair of Cooper's scissors. Grasping the spermatic cord with the fingers of the left hand, he draws it as far as possible towards the abdominal wound. Often it ruptures during the manipulation; if not, he carefully introduces the closed scissors with the right hand, and guides them to the cord before opening them. The left hand, holding the cord, assists in the adjustment of the scissor blades over the constriction, and ensures that no intestines is included when the band is divided. After division of the constriction, the strangulated portion of intestine is massaged with the fingers.

One awkward complication of this operation, which the author has sometimes encountered, is a tendency for the intestines to protrude from the wound during its performance. In one case this was so uncontrollable that the animal had to be laid upon the left side to complete the operation. The author's experience leads him to think that this accident is especially liable to supervene when, as is often the case, the owner has given large quantities of laxatives (particularly sodium sulphate) in the early stages of the illness.

The author assures himself that no trouble exists in connection with the left spermatic cord, before proceeding to close the wound. His method of closing the wound deserves notice. He has never sutured the peritoneum, and has now discontinued the practice of suturing the muscles, merely suturing the skin. He has often seen troublesome results, such as necrosis, follow the suturing of the muscles, and is convinced that healing takes place more satisfactorily when the skin alone is sutured. By this method, he is accustomed to secure healing by first intention.

Having had great success in the treatment of gut-tie both by laparotomy and by rectal manipulation, the author discusses the question as to which of the two operations is preferable. In some cases rectal manipulation is impossible; in others it is inadvisable. It is of course impossible when the animal is too young and small for its adoption, and these cases are not confined to very young calves. In calves of four or five months old, the author has repeatedly been unable to pass the hand through the anus; while in those about six months old he has succeeded with difficulty in passing the anus, but found it impossible to advance the hand far enough for diagnosis and manipulation. The cases in which rectal manipulation, though not impossible, is inadvisable, are those in which rectal exploration has already been practised by an unqualified man, and it is possible or certain that the rectal mucous membrane has sustained injury. Obviously it would be dangerous to attempt treatment by rectal manipulation in these cases.

In both the above-mentioned cases, therefore, the author recommends laparotomy. But successful as he has been with laparotomy, and thinking as he does that it is a far less formidable undertaking than it appears, he nevertheless considers that rectal manipulation is the preferable method, in those cases where it can be adopted.—*Berliner Tier. Woch.*

W. R. C.

Royal College of Veterinary Surgeons.

At a Special meeting of Council held at the College, 10 Red Lion Square, London, W.C., on Wednesday, Oct. 19. Present: Messrs. Banham, Burt, Col. Duck, Garnett, Dr. McI. McCall, Sir John M'Fadyean, Roberts, Prof. Shave, Stockman, Maj.-Gen. Thomson, and Villar.

Chairman. In the absence of the President it was resolved that Sir John M'Fadyean be elected to the chair.

Apologies for Absence. The Secretary announced that he had received apologies for absence from the President, Prof. Dewar, and Messrs. Mason and Mulvey.

Minutes. The minutes of the previous meeting were read and confirmed.

Addition to Schedule I. It was resolved that the following addition to Schedule I, passed at a Special Meeting of Council held on Oct. 7, 1910, be confirmed:—

"Universities of Manchester, Liverpool, and Sheffield, Joint Matriculation Board. Senior School Certificate (Certificate to include the required subjects).

The Relationship between Scarlet Fever, Diphtheria, and Sore Throat of Man, and Diseases of the Udder and Teats of Cows.

By Prof. A. Gofton, M.R.C.V.S.,
Royal Dick Veterinary College, Edinburgh.

(*Concluded from p. 266.*)

Diphtheria.

If it can be said with truth of scarlet fever that belief in the bovine origin of such human outbreaks has been steadily declining during recent years, the remark may be made with still greater truth of diphtheria. The fact that the causal agent of this disease is well known and recognisable has contributed in no small degree to this change of opinion. In part also it is due to the fact, unknown and probably unthought of, in the early days of the bovine diphtheria hypothesis, that patients recovered from diphtheria very commonly harbour the causal organism of that disease in the throat or

nose for several weeks, sometimes for indefinite periods varying from one hundred to three hundred days, and that so long as the organisms remain present, the patient, though apparently completely recovered, continues to act as a centre of infection. These organisms are frequently of low virulence, but under favourable conditions are capable of returning to the more virulent type.

Further, it is now known that the same organism may be found in the throat or nose of those who have been nursing diphtheria patients or in close contact with them, and also, though with much less frequency, in the throats of apparently healthy persons who have not suffered from diphtheria, and who, so far as is known, have not been exposed to infection.

A series of diphtheritic though apparently innocent sore throats, whose real nature can only be determined by a bacteriological examination, are found in association with all diphtheria epidemics, and the hosts of the bacillus are sometimes inconvenienced by its presence to such a small degree that their daily duties are performed without interruption, and they are regarded merely as the victims of a slight catarrhal cold.

These facts are placed before you because the bovine diphtheria hypothesis had its inception originally in a failure to trace infection of milk to human agencies, and they illustrate the extreme difficulty which exists in completely eliminating human sources of infection. They explain the ease with which the diphtheria bacilli may be transferred from persons apparently healthy, or, as more frequently happens, affected with what appears to be a slight, harmless cold, to lesions or sores on the teats of cows in which their presence may be demonstrated, but for the occurrence of which they are in no way responsible. They emphasise the necessity of experimental tests in all cases in which diphtheria bacilli are found in abnormal teat or udder conditions to show whe her their presence is accidental or the essential cause of the cow condition. Without experimental tests there is absolutely no justification for the conclusion that the abnormal conditions of the udders and teats of cows are the result of the action of diphtheria bacilli because they have been found in the lesions. It is my opinion that experimental tests will, as they have done in the past, absolutely fail to produce evidence in support of the view that cows are naturally the subject of a disease caused by the Klebs-Loeffler bacillus and capable of infecting human beings with diphtheria through the agency of the milk.

In the earliest days of the bovine diphtheria hypothesis, mammitis was regarded as capable of inducing diphtheria amongst the consumers of the milk with which the abnormal secretions of the diseased gland had been mixed. The epidemic at Rugby school in 1881 was so attributed, but at that time bacteriology was in its infancy and the Klebs-Loeffler bacillus as the cause of diphtheria unknown. Since that time many investigations have been made into the cause of mastitis in cows without having produced any evidence to show that the diphtheria bacillus is ever a cause of mastitis, or that any etiological relationship has ever at any time existed between inflammation of the cow's udder and diphtheria of man. Exceptionally, diphtheriod bacilli, morphologically indistinguishable from the diphtheria bacillus, have been found in association with other organisms in the secretions from, and in the parenchyma of, inflamed udders of dairy cows, but so far as the question at present under consideration is concerned, their presence has no significance, because cultural and inoculation tests have shown them to be essentially different from the causal bacillus of diphtheria. More frequently similar diphtheroid bacilli, differing from the diphtheria bacilli in their cultural characters, and in their pathogencity for animals, have been isolated from sores on the teats and from healthy teats of apparently perfectly healthy cows.

Klein, in the reports to the Local Government Board on his investigations into the cause of diphtheria (1888-89, 1889-90), was the first to bring forward what appeared to be material evidence in support of the hypothesis that the cow was the subject of diphtheria, and by means of her milk able to convey the disease to man. He held that diphtheria of the cow was manifested by an eruption on the teats and udders of the animals affected and claimed to have isolated the bacillus from the teat eruptions and from milk obtained direct from the gland uncontaminated from outside sources. He based this view on the results of the experimental inoculation of cows with bacilli isolated from human diphtheritic membranes. The inoculations were made into the subcutaneous tissue of the shoulder, and resulted in a painful diffused swelling at the seat of inoculation and beginning about the fifth day, in the appearance of a vesico-pustular eruption on the skin of the udder and teats, running its course in from six to eight days, and appearing in successive crops. The experimental cows were obviously ill, they showed an evanescent rise of temperature on the second or third day, and the majority either died or were killed in a more or less moribund condition after ten to twenty-five days. The bacilli were recovered from the udder lesions, and in two cases from the milk. The udder eruption was not constant; it appeared in four out of eight cows inoculated.

These experiments of Klein's cannot be regarded as of any value for or against the bovine diphtheria theory for several reasons. In the 1888 portion of his report, Klein casts doubt on the specificity of the Klebs-Loeffler bacillus, and the organism with which he worked varied in its cultural characters from those of the bacillus now universally recognised as the organism of diphtheria, notably in growing well on gelatine at 20°C. A feature of the Klebs-Loeffler bacillus appears to be its localisation to the seat of inoculation, whilst a striking result of Klein's experiments was that the bacilli entered the circulation and appeared in the udder eruption, and in two cases in the milk. The limited number of his experiments on cows and his inconstant results scarcely justified the general conclusion that a vesico-pustular eruption was a feature of bovine diphtheria, assuming that such a disease exists. Subsequent investigators have failed to confirm Klein's results. It is therefore not surprising that his conclusions have come almost universally to be regarded as having been founded on error.

It was nevertheless characteristic of the period in which Klein carried out his investigations to attribute the origin of milk-borne diphtheria as well as other milk-borne epidemics to co-existent eruptive disorders of the udders and teats of dairy cows; and in 1890 Klein refers to two such outbreaks, at Croydon and Bishop's Stortford, in which the cows on the farms supplying the infected milk were affected with (1) "a contagious, ulcerative eruption on the teats very like that occurring in the cows experimentally inoculated by me with cultivations of the diphtheria bacillus." These epidemics, as well as the Worcester outbreak of 1891, and that at Glasgow in 1892, are recorded as having been of bovine origin, but as evidence of the occurrence of bovine diphtheria they are valueless, since in none of them was the presence of the diphtheria bacillus demonstrated in the milk or in the teat or udder lesions. Klein's note on the "cases of casual diphtheria in the cow" at Croydon and Bishop's Stortford contain no reference to a bacteriological examination. In the Glasgow case the "Hendon streptococcus" was isolated

(1) Local Government Board Report.

from lymph taken from the teat lesions, whilst experimental inoculation was said to have shown that two varieties of eruption existed, one being true vaccinia, and the other a non-vesicular eruption like that of the Camberwell outbreak, which, it may be said, was not associated with diphtheria. The evidence connecting the cows with the human disease in the Worcester case is on a similar footing.

It was therefore purely an assumption to have regarded these diphtheria epidemics as in any way dependent on the teat and udder conditions of the cows, an assumption based apparently solely on the co-existence of these conditions.

Swithinbank and Newman (2) state that the cases in which the *Bacillus diphtheriæ* have actually been isolated from milk are extremely few, and they cite four cases which they state are the only authentic instances of actual detection of the bacillus of diphtheria in ordinary milk with which they have met. Only one of these was associated with an abnormal condition of the teats and udders of cows. Two cows were involved, and both showed papules and ulcers on the teats, covered with dark brown scabs. In one the udder and the secretion of milk were normal, and in the other one posterior quarter was affected with mammitis, the secretion being ropy, purulent looking, and tinged with blood. Drs. Deans and Todd, who conducted the bacteriological investigation of this case, isolated from the teat lesions bacilli which morphologically, culturally, experimentally, and in their degree of virulence, were indistinguishable from those obtained from the throats of the diphtheria patients, and against the effects of which experimental animals were protected by the previous administration of diphtheria antitoxin. They also isolated identical bacilli from the milk of both of the cows, drawn with all antiseptic precautions, notwithstanding that the udder of one appeared to be normal. Experiment showed, however, that the organisms were not the cause of the udder lesions. The cow disease was readily communicable to calves, but the calves were not protected by the previous administration of diphtheria antitoxin, and the conclusion of the investigators was to the effect that the cows were affected with a specific eruptive condition apart from the diphtheritic infection, but that there was no means of determining the manner in which the bacilli of diphtheria obtained access to and multiplied in the lesions of that disease, though they appear to have regarded it as probable that the saliva of the attendants was not free from responsibility.

Deans' and Todd's investigations suggest the possibility of the diphtheria bacillus multiplying in the healthy udder without producing evidence of its presence; in other words, of existing there practically as a saphrophyte. It has yet to be shown whether or not the *B. diphtheriæ* are capable of existing saphrophytically in the healthy udder, but even if they are proved to be capable of such an existence, the fact is not one which would afford support to the bovine diphtheria hypothesis.

I have been completely unable to find any real grounds on which a theory of bovine diphtheria could be based. So far as any part which the cow may play in the dissemination of diphtheria is concerned, the whole weight of evidence points to her acting merely as a convenient stepping stone, by means of which the bacilli of diphtheria may pass from the human mouth into the milk pail.

In conclusion, the same authorities referred to in connection with scarlet fever may be quoted:

"Only a person in absolute ignorance regarding the bovine diseases encountered in this country can imagine that diphtheria is a disease occurring naturally in the cow and transmissible from one animal of that species to another."—M'Fadyean, *Journ. Comp. Path. and Therap.*, vol. iii., p. 166.

"Up to the present it may be said that the evidence forthcoming points in the direction of human rather than bovine infection as the origin of the *B. diphtheriæ* in milk."—Swithinbank and Newman, "Bacteriology of Milk," p. 339.

"The cases recorded in medical literature of the alleged transmission of infection (of diphtheria) . . . are on closer examination reduced to mere assumptions, the forming of which has been due to an entire ignorance of veterinary pathology."—Friedberger and Fröhner, "Veterinary Pathology" (Hayes' transl.), vol. ii., p. 414.

"The bacillus of diphtheria must come directly or indirectly from the oral cavity of people who are or have been recently attacked with diphtheria. . . . The opinion that was held formerly by some that diphtheria in man could come from a disease of milk cows is entirely erroneous."—Jensen, "Milk Hygiene" (Pearson's transl.), p. 114.

Sore Throat.

It is a matter of common knowledge that a considerable number of cases of sore throat occur in association with the majority of scarlet fever epidemics, whether milk-borne or not, and that the two occur not infrequently in the same household. There is no room for doubt that a close relationship exists between the two. The same holds good for diphtheria. A type of sore throat, however, apparently quite distinct from either of these two diseases, is met with in human beings. It is characterised by congestion and inflammation of the tonsils, sometimes ulceration, enlargement of the cervical glands, fever and general depression, without other evidence of specific infection.

This condition is not notifiable, but its occurrence at times endemically or epidemically has resulted in special inquiries being instituted to trace the source of infection, and as with the two diseases already dealt with, the conclusion has been reached in certain instances in which milk has been shown to be the medium of infection, that abnormal conditions of the cows furnishing the milk have been responsible for its infective properties. Bacteriological evidence in support of this conclusion cannot be found however, and consequently definite proof of a causal relationship between the human and animal conditions is wanting.

Inflammatory conditions of the udder have been most frequently found in association with these epidemics and have been held responsible for the infectivity of the milk, but eruptive conditions of the skin of the udder and teats have also, though less frequently, been regarded as the primary cause of the human condition.

Probably it has been the experience of every inspector of dairy cows to find that the secretions from an acutely inflamed udder have been added to the general stock of milk sometimes for several weeks in the intervals between visits of inspection. Such instances are fortunately uncommon, and almost invariably when the secretions from an inflamed quarter have undergone obvious change, they are rejected by the dairyman independently of the inspector. Given a case of mastitis, however, involving one quarter of the udder only, the custom almost universally prevails of mixing with the general stock of milk that secreted by the healthy quarters, since to all appearances it is perfectly sound. It has recently been shown that micro-organisms indistinguishable from those causing the mammitis may be found almost constantly in the teat canals and in the milk sinuses of the healthy quarters, where they produce no morbid change and no alteration in the milk. It thus follows that if mastitis be a cause of human sore throat, large quantities of milk which are a

(2) Bacteriology of Milk.

potential source of infection are distributed and consumed daily.

In subacute catarrhal mammitis there is no apparent change in the milk when first drawn from the udder, but if "set up" for a few hours it shows a marked departure from the normal, and on examination is found to contain streptococci in large numbers. This condition is by no means uncommon, and until the attention of the dairyman is drawn to it, the secretions of the affected quarter or quarters are invariably added to and distributed with the milk.

Similarly in eruptive conditions of the skin of the teats. I very much doubt if it is possible to examine a herd of dairy cows of any dimensions without finding several with lesions on the teats, and there are probably few veterinary surgeons who have not had experience of eruptive conditions of the teats of dairy cows communicable from one animal to her neighbour by the hands of the milkers, in which for weeks the milk drawn from animals in all stages of the affection has been distributed in the ordinary way and consumed by human beings without any coincident sore throat or other epidemic.

Experience of this description forces upon us the conviction that if mastitis or eruptive disorders of the udders and teats of dairy cows are capable of producing sore throat amongst the consumers of the milk, the great majority of such cases are not capable of so doing, for if they were at all commonly a cause of sore throat in man, it is obvious that epidemics of that condition would be of very much greater frequency than they are.

The only bacteriological evidence which is available on this question supports this conclusion. Savage (3) has recently carried out a series of investigations into the bacteriology of mastitis and the etiological relationship of that condition to human sore throat. He found that in 75 per cent. of the cases of mastitis which he examined, the causal organism was a streptococcus occurring in long chains and possessing a very low virulence for guinea-pigs and mice, but inducing, when injected up the teats into the udders of goats, a severe mastitis with long-continued infection of the udder. To this organism he applied the name *Streptococcus mastitidis*. In one of his experiments he injected into the udder of a goat streptococci from a sore teat, with the result that an extremely severe mastitis was produced with marked general symptoms and long-continued persistence of bacteria in the udder.

Simultaneously, an investigation of the organisms met with in human sore throat was made, and confirming the results of previous investigators, Savage found that two chief types of streptococci prevailed—the *Streptococcus pyogenes* and the *S. anginosus*—the latter being the more common, and corresponding to the streptococcus which exists in large numbers in the throats in scarlet fever.

He showed that culturally and morphologically the *S. anginosus* is indistinguishable from the *S. mastitidis*, that experimentally it possesses considerable virulence for mice, and that it is incapable of originating mastitis in goats. The effects of the *S. anginosus* when inoculated into the udder of goats thus afforded a means of differentiating it from the *S. mastitidis*, and Savage suggested as a practical point that the best way to determine if outbreaks of human disease were spread by streptococci associated with inflammatory cow conditions, was to isolate the streptococci from the human disease and see if they would cause mastitis in goats by inoculation up the teats. If they were of milk origin they should produce mastitis in goats. These results suggested to Savage that the *S. mastitidis* is not a cause of human disease.

Bacteriological evidence therefore, so far as it is available, does not support the belief that human sore throat has its origin in mastitis or teat lesions of the cow. But the evidence is not sufficient to permit of the complete exclusion of these conditions as causes of human sore throat. The many investigations into the bacteriology of mastitis in cows have shown that different varieties of bacteria may be the cause of that condi tion in cows. Streptococci undoubtedly are most frequently responsible, and whilst one type predominates, several other varieties have been distinguished. Staphylococci are less frequently found and are usually associated with the milder forms of mastitis. Still less frequently bacilli, usually of the coli type, are met with. Not uncommonly several different types of organisms co-exist in the secretions from an inflamed udder, making it difficult to determine which has been responsible for the morbid condition. (Specific conditions, as tuberculosis, are not at present under consideration.) It is conceivable that one or more of these types of bacteria may be capable of producing sore throat in man, but I have seen no report of a sore throat epidemic which had its origin in infection through milk, in which the facts brought to light in the course of the investigations have established an etiological relationship between the human condition and either mastitis or sore teats in cows.

There is another point which is of importance in this connection. Staphylococci and streptococci, bearing a close resemblance to those which are a cause of mastitis except in their pathogenicity for animals, may be found in the teat canals and milk sinuses of perfectly healthy udders. Their numbers vary within wide limits, but they are rarely absent. Since they are found with such great frequency very few can, and probably none do, possess pathogenic properties for man. They appear to be purely saprophytic. The demonstration, therefore, in the throats of human patients infected by milk, of bacteria culturally and morphologically similar to those found in the udders, whether apparently healthy or not, of cows on the premises from which the infected milk is obtained, falls very considerably short of proof of an etiological relationship between the human and animal conditions.

Whilst the experience of veterinary surgeons inspecting dairy cows and the bacteriological evidence available do not support the view that a relationship exists between human sore throat and morbid conditions of the udders and teats of dairy cows, the question is one which can only be definitely settled by time and the most careful investigations of human epidemics carried out by highly trained observers as opportunity offers. But whether or not it is ultimately proved that an etiological relationship sometimes exists, all will agree that the milk of cows affected with mastitis in any form, or with teat conditions in which discharges or material from the teat lesions are liable to find their way into the milkpail, should not under any circumstances be permitted to be sold and used for human food.

(3) L. G. B. Reports, 1906-1907 and 1907-1908.

CENTRAL VETERINARY ASSOCIATION OF IRELAND.

Proceedings in Ballinasloe, Oct. 4. A demonstration by Prof. F. C. Hobday on the "Ventricle stripping operation for roaring," took place at O'Carroll's Hotel, at 4 p.m. Subjects were provided by the Secretary and Mr. P. J. Howard, and Prof. Hobday described and performed the operation, in the presence of the members of the Association, in a very able manner, and with great precision.

The members dined at 7 p.m., at Hayden's Hotel, and at 8.30 p.m. Prof. Hobday proceeded to read an address, describing the technique of the operation, and a number of letters from owners of horses operated on.

Present: Mr. J, F. Heaiy, Midleton, Chairman: Prof. Hobday; Messrs. E. C. Winter, Limerick; Chris. Rea, Clonmel; P. J. Howard, Ennis; P. J. Walsh, Croom; M. Purcell, Mullingar; P. F. Tubridy, Kilrush; Fred. A. Heney, Dublin; H. W. Percy, Athlone; J. Dawson, Enniskillen; Cantrell Tracy, Ballinasloe; W. C. Patrick, Mullingar; E. A. Ryan, Strokestown; J. T. Clanchy, Charleville; A. J. Moffett, Galway; J. W. Nolans, Birr; E. J. Mulligan, Roscommon; E. J. Bolton, Athlone; A. F. O'Dea, Tuam.

Visitors: Miss A. Cust, Athleague; Miss English, A.R.M.O., The Asylum, Ballinasloe.

The CHAIRMAN, after dinner, in opening the proceedings, said he thought they were under a great obligation to Mr. Hobday for coming to Ballinasloe to give them the demonstration which they had been present at earlier in the day. (Hear, hear.) He had come a long way to give the demonstration, and on behalf of the Central Association he (the Chairman) now begged to thank him. (Applause). It was only a few days ago he learned that Prof. Hobday was in the coantry, and he accepted the invitation to come in a chat on the telephone. (Hear, hcar).

The operation which formed the subject of the demonstration was one which he (the Chairman) believed, from the results of some cases in his district, would come largely into use. As practitioners he thought, at the present anyhow, it was best for them to leave it alone and let it be done, by a man who thoroughly understood it. When they found that the operation was required in any of their districts, they should appeal to a man like Mr. Hobday, and get him to do it. (Hear, hear). Manipulation was a great thing, as they had seen that day, and he felt they would agree that it would be a very bad thing if a job like that were botched. (Hear, hear).

Mr. P. J. HOWARD (Ennis) said Prof. Hobday was known everywhere as a pioneer of good work in the profession, and he thought it was something that the Central Veterinary Association would look back on with pleasure, for a number of years, that Prof. Hobday had come to so backward a place as Ballinasloe to compliment the Association, and help the work of the members. (Hear, hear). Personally he was very grateful to Prof. Hobday.

Mr. E. C. WINTER (Secretary) also spoke in appreciation of the kindness of Prof. Hobday which was all the greater, as the Professor was anything but and idle man. (Hear, hear).

Mr. WINTER then read the minutes of the previous meeting held at Turner's Hotel, Cork, on June 8th.

The minutes were adopted unanimously, and signed by the Chairman.

Mr. WINTER then suggested that the ordinary agenda of the meeting be cancelled on account of the presence of Prof. Hobday, whom he was sure they would all like to hear, and perhaps to ask him some questions. (Hear, hear).

Without discussion it was decided, *nem con.*, to adopt Mr. Winter's suggestion. The ordinary agenda including a paper to be read by Mr. Tracy was cancelled.

Prof. Hobday was very cordially received.

SOME FURTHER REMARKS ON THE ROARING OPERATION.

By FREDERICK HOBDAY, F.R.C.V.S., F.R.S.E.

Mr. President and Gentlemen,—I appreciate very much the honour which you have done me in asking me to come to Ballinasloe, on the occasion of your annual fair, as its celebrity is world wide, and I have seen to-day more prospective patients collected together within a comparatively small circle than I shall ever expect to see again. I make this statement with the knowledge that the specialist who makes the surgical treatment of roarers one of his hobbies, obtains most of his patients from the hunter class, and that it is an established fact that there is no country in the world which breeds such good hunters, and so many of them, as Ireland. (Hear, hear).

That roarers do exist is, worse luck, too palpable, and the difference in value between a horse when sound in wind, and the same animal after having become a roarer is simply appaling; in fact often and often it amounts to hundreds of pounds. Any measure, therefore, whether medicinal or surgical, which will cure, or even ameliorate, the distress or noise produced by a roarer must be welcomed by veterinary surgeons and horse-owners alike. (Hear, hear).

Medicinal measures are, I fear, bound to be failures, unless perhaps very temporarily. Drugs of all kind, the application of galvanism, and of electricity, have all been tried, and found to be useless, and it is upon surgical measures that we must pin our faith.

Pioneer work must be done in all operative measures of this kind, and the name of Fleming, Fred Smith, and Raymond in this country, Bouley and Cadiot in France, Gunther and Möller in Germany, Stockfleth in Denmark, Bossi in Italy, and Williams and Liautard in America, must always be acknowledged in this direction. (Hear, hear). Their diversity of nationality shows clearly the widespread nature of the disease, and necessity for the discovery of a means of relief.

That "prevention" would be the best "cure" I firmly believe, and in this direction we veterinary advisers cannot too emphatically urge upon all breeders the necessity of selecting both sire and dam from sound stock, for I am sure I shall have no dissentient here to the statement that "roaring is hereditary"—I think all will agree that it is one of the most transmissible of all the diseases to which equine flesh is heir, although equally common is the history of the roarer or whistler whose ailment dates from the time when he passed through a severe attack of strangles. If we could but get rid of these two microscopical factors, unsound parentage cells, and strangles organisms, it is safe to prophesy that in five years the number of roarers in all countries would be reduced by at least one half. (Hear, hear).

Of the various surgical measures attempted from time to time, with one exception, I do not propose to deal to-day. They are all too well known, and probably the Irish veterinary surgeon knows much more about them than his English colleague. They have been recently discussed before our veterinary Associations, and it is generally acknowledged that, until lately, use of the tube was the only one resorted to. Its utility is so great, and the owner can hunt or race the horse on the following day, but the annoyance of constantly cleaning the tube, of being unable to turn the horse out, of subsequent granulation, and a dozen other little inconveniences, have made the prospect of a cure (or even an amelioration) by other measures without its use, welcomed by everybody.

An operation, therefore, which will give even only a reasonable proportion of successes is welcome, and I am at last in a position to-day to be able to tell you that I feel sure the ventricle stripping operation, modified by some ideas of Gunther, as modified by Williams, and still further by myself—I refer particularly to the operation through the crico-thyroid-ligament only, and to the stripping of both ventricles—has come to stop. (Applause).

Some of the letters, of which I have a decent sized bunch, and which I shall read to you presently, are most gratifying; two, in particular, proving the lasting benefit, for the horses have now been hunted, and were in each case operated upon more than twelve months ago.

Had your Association meeting taken place a month or six weeks later I should have had at least a hundred

results to detail to you, as this hunting season will tell me lots. A single gallop is nothing like so fair a test as a good day with hounds, and my impression is that, with the double stripping operation, as time goes on, the laryngeal opening must of necessity be increased in volume rather than diminished.

The larynx I have here shows that well, and if one can get an obliteration of the ventricle to this extent in the short period of five weeks, it is easy to imagine that in a further three months the vocal cord would be drawn back practically flush and level with the cartilage. Besides which—and this is also an important factor in favour of the double side operation, the fact that cicatricial contraction takes place on both sides, and not on one only, is much more likely to cause the orifice to be uniform, and not lopsided in shape.

Of the method of operating I need say nothing, you have seen it to-day, and if you desire me to explain anything in regard to the technique, or any point of detail, I shall only be too pleased to do so. The reason for attempting the double side operation has already been laid before the profession in the paper read before the Midland Counties Association on the 11th August, and I have at present had no reason to alter the views expressed there. I have recently heard from Dr. Williams, and his assistant Dr. Frost, in America, that this idea had occurred to them, and they are also giving this method a trial, and it looks as if, amongst us all, we shall have presently some very interesting reports to give to the profession. Personally, I am now able to relax a little of the caution I expressed at Birmingham, and although still declining for a few more months to absolutely commit myself, I think I can now go so far as to say that, as a result of well over 200 operations, in some of which one side, and in others of which both sides have been done, this method of surgically treating roarers has come to stop, and that I may safely promise improvement, if not complete cure. In the carriage and cart horse this is especially more marked even than in hunters and racehorses, but even with these I am sure that a decent percentage will be attained. At any rate the horse is no worse a patient after the operation for the insertion of the tracheotomy tube, if such has become necessary.

I do not commit myself to figures at present, but the statistics are accumulating, and will presently be given to the profession. My reason for waiting is that I may be quite sure, and I do not consider that, as yet, sufficient time has elapsed; so many having been done during a comparatively recent period. As I said a few months ago, the hunting season will tell me a lot.

The comparison between the result of the single and double ventricle stripping will be of exceptional interest, and will definitely settle this point. Do not forget that there is a little element of danger from asphyxia with the double operation if both are done at the same time, a danger due to swelling of the vocal cords. For this reason a careful watch must be kept on the patient for 48 hours, and a tube inserted if necessary. Out of the 200 patients it has only been necessary five times, the tube being left in for about three days and then removed, always in double stripping cases. In the single stripping cases, about 150 in number, we never had a suspicion of dyspnœa, nor indeed of any symptoms likely to give rise to the smallest anxiety, but experience has taught me that the more delicately and gently one operates, and the less one pulls the vocal cords about, the better the immediate result, this is one reason for the use of as few and simple a set of instruments as possible, manipulation by the fingers being much more satisfactory. As a rule the horse swallows and feeds well immediately after the operation, although on the second or third day he may be a little dull, otherwise I have never seen any cause for alarm. As regards the question of soundness, this, to every veterinary surgeon in a hunting district, is a point of great importance. Personally, I hope to be able to establish the fact beyond question, on indisputable results, that if a horse is right six months after operation, he can never become a roarer or a whistler again. Also that if a well known bad roarer becomes so much ameliorated after the operation as to be only a whistler, or as it is termed "thick in the wind," he will never become a roarer again. (Hear, hear.) If I can prove this it will be a great point, as plenty of horses will be able to be bought with confidence by owners of moderate means—horses which if absolutely sound in wind and noiseless, would be worth say £100 or £150, as roarers only £20 or £30, and as horses which have been roarers, and been operated upon, and attained to a certain degree of improvement sufficient to be permanently serviceable and workable, as horses which make a slight blowing sound or other noise but are not stopped by it, their value will be fully £60 or more. I have ground to think too, from the reports which have come in, that the double stripping operation does away with the grunting.

I am afraid you will all be thinking that the operation is not much of a blessing to the general practitioner, and that it only adds another pitfall to the hundred and one already existing for the man who examines for soundness. Certainly the scar is almost indistinguishable after three months, and if observed at all, may readily be mistaken for a curl or whorl in the hair.

In concluding my address I do not think I can do better than to read you some of the letters from owners of horses operated upon. I will give you both sides of the question, those dissatisfied as well as those well contented, but I especially draw your attention to the two whose owners are still satisfied after twelve months has elapsed, and one had lost last year half a season's hunting, the other has been hunting all the time with the Devon and Somerset Stag Hounds, in one of the most hilly districts in England; each of them operated upon by Dr. Williams at the time he so generously came, at my request, and gave myself and a few veterinary friends the first demonstration of his modifications and technique.

Concluding, Prof. Hobday said—"If we can only guarantee sufficient amelioration to make the brutes useful, we will have done what has not been done before, and if we find we can make a cure we can really congratulate ourselves. (Hear, hear, and applause).

Referring to the question of carriage horses which had been operated on, and in reference to which he read some letters, Professor Hobday said there was one horse which could not come up Piccadilly without everyone looking at her, now no one hears her unless close up to her nostril, then a slight blowing noise might be heard, that was all He had done several carriage horses, and they all followed the same course, and it did not stop them from their work.

In giving some passing comment on letters, which he said were of a doubtful nature, the Professor told of one case in which the owner informed him that his mare after operation would not neigh, she was quite depressed he said, and had got quite thin because she could not neigh. (Laughter.)

Prof. Hobday during his address submitted for examination by the meeting two anatomical specimens: (1) The larynx of a true roarer, and (2) the larynx of one in which there was congenital deformity. He also showed the instruments used in operating, and pointed out that his forceps were more neat and natty than others, which had been found very clumsy for catching hold of the mucous membrane.

Discussion.

The Chairman asked if any of the members wished to make any remarks or any inquiry of Prof. Hobday.

Mr. E. C. Winter said he would like to ask in refer-

ence to the operation, in the event of the operator only wishing to do one side at first, at what date subsequently would it be safe to operate on the other side. He thought if they could get even 50 per cent. of cases with a successful result, such as some of those to which Prof. Hobday had referred, it might be better to do the two sides at once, but if only one side were done, he would be glad to know when the second operation could be safely performed. He would like to add his quota of thanks to Prof. Hobday for coming there and not only giving the demonstration but going to such pains in putting together the notes he had just given them. (Hear, hear.)

Mr. W. CARGILL PATRICK said Prof. Hobday had given them interesting and very extended reports, but he (Mr. Patrick) was afraid the operation had caught on in some places where a great deal more would be expected of it. It was certainly a very important matter in this country, and to do away with "roaring" in horses. He could understand, of course, that from an instructional point of view, some men might like to keep their own horses, and have them operated on, rather than to part with them. Mr. Patrick also referred to the single stripping operation and the question of roaring still existing after it. He referred also to the danger of new granulation adhesions. Might these not come after the operation, and was there not danger of their pressing on the paralyzed cord and also on the other? There would be, he thought, the danger of contraction. He could see it in the narrow lumen. He would also like to know the probable period of usefulness of horses which had been operated on. However, he thought the policy of "wait and see" as the Professor said, was the best in the matter. He wished to join in thanking him for the interesting demonstration, given in the most able manner, and also for his notes. (Hear, hear).

Mr. P. J. HOWARD said he had little to say except to thank the Professor for the trouble he had taken in preparing his notes. (Hear, hear). There was a matter to which he would like to refer, it was one which might, he feared, cause some trouble in their country, and he had mentioned it that day to Prof. Hobday. A well-known roarer would be brought to them, and they would be asked to decide after the operation whether the animal was a legally sound horse. They were all sportsmen, and might perhaps be anxious to procure a good-looking one that was a bit musical (Laughter), but suppose a horse is brought to a veterinary surgeon and he finds he is all right, but has said nothing about the scar, what was the position? The question was—Is the horse legally sound? He (Mr. Howard) thought not. He thought it would be like the case of a horse that had been unnerved for navicular disease. At the same time, it would be a very foolish attitude to adopt not to recommend the operation, especially after their wings had been clipped in many ways. (Laughter). There was no doubt anyhow this operation would never be attempted by a quack, if they were able to operate and they could turn horses which were useless into useful animals, it would be certainly a feather in their cap. (Hear, hear.)

Mr. REA paid a tribute to the very scientific manner in which Prof. Hobday had operated. He thought this was an operation which should not be undertaken by any common or garden man, and he believed it would pay them well to get a specialist to perform it. Take the operation for appendicitis. The dispensary doctor might be a very able and clever practitioner, but in such a case they would rather get Sir Frederick Treves—not because he operated on the King—but because he was a specialist in such an important matter. They could put their heads together when this operation was to be done, and get it performed by a man who knew what he was doing. (Hear, hear.) They might say, if they liked, that they could do it as well as a specialist, or as well as they could do other operations with which they were quite familiar, but let them remember that it was a matter in which they could make fools of themselves, and bigger fools of their clients. It was much better for them to arrange with the client to get a specialist, and let him get his fee, and let him make a fool of himself. (Laughter.) For the present let them send for Prof. Hobday, or Prof. Winter if they wished, when the operation was to be done. When they had seen Prof. Hobday doing eight or ten more operations, they might, perhaps, afford to make fools of themselves. There were a great many people in this country who would not walk ten yards to teach anyone anything.

A Member: Query? query?

Mr. REA: There is no query; it is a fact. Here we have Prof. Hobday who has come from England to teach us something, and I will conclude by thanking him for what he has shown us, and for what he has told us. (Hear, hear.)

Mr. JOHN T. CLANCHY differed from Mr. Howard in reference to passing horses as sound which had undergone this operation; if a horse was cured he did not see why he would not pass him. He could not, for the life of him, see why it should not be done in this case, as in the case of a horse fired for spavin.

Mr. W. H. PERCY (Athlone), said he was fortunate enough to have been one of Prof. Hobday's pupils, and whatever skill he, Mr. Percy had, was wholly and solely due to what the Professor had shown him, and the words of encouragement which he gave to him and to every student. (Hear, hear.) Prof. Hobday had shown them the two sides of the question that evening, and that in itself was a proof of genuineness. (Hear, hear.) Everything the Professor said, showed the hall-mark of being genuine. There were several gentlemen who said that this operation should not be undertaken by ordinary veterinary surgeons. He did not agree with that view. He did not think the operation was a very formidable one. He thought that as a rule, they were too much afraid of operating, they should employ their best skill; they should do their best, and if the animal died after that they could not help it. He, Mr. Percy, would not be afraid to undertake the operation, and he thought they should undertake it. Referring to the forceps for this operation which Prof. Hobday had exhibited at the meeting, Mr. Percy said he would like to see little teeth or projections at the end, that the operator could catch the mucous membranes more closely. As it was, he thought there might be danger of the forceps slipping.

Returning to the discussion, Mr. Percy said Mr. Patrick seemed to throw cold water on the operation. Well, he thought they, as veterinary surgeons, should not throw cold water on it, especially as Prof. Hobday has proved up to the hilt that it was successful. As to the question of "soundness" which had been mentioned, he thought the consideration for them in such cases was, whether the horse was sound or not after the operation; if the animal was sound, well, then, he was sound—that was all. There was no comparison between this operation and that of neurectomy, in which certain functions were concerned, such as the giving of nutriment to parts of the feet. Referring to Mr. Patrick's remarks in reference to the danger from granulation and adhesions, he did not think that the two mucous membranes would join, he understood Mr. Patrick to say that the two cords might unite and come into the median line. He (Mr. Percy), thought that where there would be contraction—what would happen, was that the mucous membranes would be drawn away from each other. In joining to thank Prof. Hobday, Mr. Percy said, whenever he came he did good and infused a certain amount of enthusiasm to the practitioners which they frequently did not possess.

Mr. J. DAWSON said he agreed with Prof. Hobday

that they should adopt the Asquithean code, and "wait and see." On the question of contraction, he did not know that it was altogether a matter of contraction as well as granulation. He was inclined to the opinion that if a horse became sound after the operation, it would remain sound. In his opinion, however, the great thing was to get rid of the hereditary roarer in selecting sires. He had twenty-two years' experience of horse breeding, and he never touched anything that had even a great sire or a great dam a roarer. (Hear, hear.) And he might add that he never yet had even a whistler. (Hear, hear.) He had come to the conclusion that this matter was a question of pure breeding and not of strangles at all.

Mr. J. W. NOLANS mentioned the case of two animals on which the operation had been performed by a professor some little while ago. One of the animals subsequent to the operation suffered from dyspnœa, and for twenty-four hours it was very painful to observe him, but after that it passed away quickly. The other animal never refused a meal. He had not yet been able to learn the results in these cases as to the soundness, etc. On the question of passing for soundness, he thought for those who asked on the subject, it was purely a matter of whether the animal was found to be sound or unsound. This operation and that of unnerving were two operations not analogous in any way he considered. He joined in thanking the Professor for coming there, and for his very interesting remarks.

The CHAIRMAN told of some horses operated on in his district, one of which—a bad case—he had given a canter of one and a half miles subsequent to the operation, he seemed to him then to be perfectly sound. He thought that when recommending the operation to any of their clients they should seek the services of a man who had been able to devote special attention to the operation. Look at the position if one of them were to say to a client "I will charge you £10" and then did not succeed in making the horse sound. A veterinary surgeon, an ordinary practitioner, might be a very good man, and yet not have the time and opportunity necessary to justify him in undertaking the operation. It was not a simple operation. He (the Chairman) had looked carefully at these specimens. He thought the operation was one which should be done by a man who had specially given a great deal of time to the subject. As to jealousy about getting a specialist, he (the Chairman) did not see that there should be any jealousy. (Hear, hear.)

Mr. PERCY said when any of them took up a case they only undertook to do their best, they did not undertake to cure, only to do their best.

REPLY.

Prof. HOBDAY thanked them all very much for the very kindly welcome extended to him. The hospitality of Ireland had indeed been a revelation to him. To speak of his coming there being a trouble to him was out of the question. It was a pleasure to him to come and help them, and he knew he would be sure of an appreciative audience from Irishmen, who must meet with this question of roaring in horses every day of their lives. (Hear, hear.) He was particularly interested that evening in what Mr. Dawson said on the subject of heredity. He was sure from questions he had put to horse breeders, that heredity played a very large part in the production of roaring.

Referring to Mr. Winter's remarks, Professor Hobday said he had dealt with some 208 or 209 cases, and was now dealing with some ten or twelve on the opposite side. At present he was rather inclined to go on with the double stripping and risk the tubing. They would know more certainly on the subject later on. Having referred to the fact that, in connection with the operation, troublesome temporary effects might be expected, and that a man might even have to sit up all of a night with a horse, the Professor said his having re-opened in some ten or twelve cases, brought him to Mr. Patrick's remarks. Taking the larynx (already submitted to the meeting) in his hand he pointed out the way to get along the ventricle, and added that he had been told by Fleming that, if in operating, a certain cartilage (pointing to it) were injured, they would get granulation tissue. Indicating a portion of the cartilage with his fingers, the Professor said the granulation tissue could not project if it were under that cartilage. He had re-opened in ten or twelve cases, and in none of these did he get any evidence of what Mr. Patrick spoke of. What he found was that the larynx had been drawn back out of the way. He agreed with the view that this operation was analogous in the matter of the subsequent condition of the animal, not to neurectomy, but to operating for spavin. If a horse has been done only five weeks when they were called in to pronounce on him, well, they didn't know enough to do so, but if it were six months after the operation he considered they would be in a position to do so. At present they were only working on cautious facts. He had been charged with hedging in the matter. Well, he would continue to hedge until he was quite sure. (Hear, hear.) They must "wait and see" as Mr. Asquith had said. Referring to an animal "St. Louis," which had been operated on, and about which he had read a letter from the owner earlier in the evening, Professor Hobday said that he believed he could guarantee that the next time he saw this animal he would pass him as sound. If a horse lasted six months in good condition after the operation he would not go back. As with spavin, the probability was that he would not go back.

Mr. CLANCHY, referring to the remarks of Mr. Dawson, said he would like to know if it was simple strangles, or bastard or irregular strangles to which he referred.

Mr. DAWSON said he had experience of all sorts. He might say he never yet bred from a mare or a sire in whose pedigree he could trace any history of whistling or roaring. Of course they had irregular strangles showing in various parts of the body, and he did not think it had anything to do with what they were at just now. He had only stated his own experience for them.

The SECRETARY mentioned some letters of apology which he had received for non-attendance at the meeting.

Mr. HOWARD said under ordinary circumstances, the next meeting would take place in Dublin in January. Sometimes this meeting did not come off at all, and sometimes a very small number attended. Suppose it was altered to be held in Punchestown week, or in the week of the Spring Show, instead of in January, thus holding it at a time when there would be other attractions to bring members up, and get a larger attendance at the meeting.

The CHAIRMAN said the Ballinasloe meeting always seemed to be the best of all their meetings in the year.

Mr. WINTER suggested that the place and date of next meeting be left in the hands of two or three members of the Council to fix. They could leave it to some three or four who would provide some attraction for the meeting. For one thing they would have Mr. Tracey's paper. The Dublin meeting seemed to have been the worst with them. Of course going to Dublin meant for most people a day and a night away, whereas to other places it meant little more than half a day. He would suggest that they should have something of the nature of a demonstration for the next meeting. They wanted to show the members the usefulness of the Association, and this was a very good way, and was a great attraction. (Hear, hear).

UMI

Mr. NOLANS considered Mr. Winter's idea an excellent one. As to the Clonmel meeting, he considered it was a very hard place to get to or from.

Mr. WINTER said they could have a daylight meeting at Limerick Junction.

The CHAIRMAN also approved of Mr. Winter's suggestion about a demonstration. It was what was required more than a good many things at their meetings. He had been at meetings of the National Veterinary Society at Plymouth at which, by the way, the Professor acted, and also at a meeting in Manchester, where a demonstration was given of connecting the right with the left laryngeal nerve for the cure of roaring.

Mr. HOWARD said they had already tried to have a meeting at the Limerick Junction, and it was not successful.

Mr. WINTER suggested that the question be left over for the next meeting of the Council to decide, and he propcsed that the Council meet on the Wednesday of the fair in Limerick.

Mr. J. WALSH (Croom) seconded, and the date was fixed for the 26th (or 27th) October in Limerick. The place of next meeting of the Central Association to be discussed and settled on that occasion.

Mr. NOLANS moved a cordial vote of thanks to the Chairman, and referred to the distance he had come to be with them.

Mr. WINTER, in seconding, said it was Mr. Healy who first gave him the word that Prof. Hobday would be about at the time of their meeting, and thus was instrumental in having the Professor there that day. (Hear, hear). Mr Healy made made an excellent President. (Hear, hear). He came there to them as a good old sport, what he always was, and always would be. (App.) He made a very good Treasurer, but he (Mr. Winter) thought even a better President. (Hear, hear).

Mr. HOWARD, in supporting, urged the necessity of the members coming to the meetings. Surely when they had an enthusiast like Mr. Healy at the head of affairs they should come and support the Association which was doing good work. (Hear, hear.)

The vote of thanks having been tendered by acclamation.

The CHAIRMAN said he thanked the meeting heartily, as well as the gentlemen who had spoken so very kindly of him in proposing and supporting the vote of thanks; he needed no thanks for it, it was a great pleasure to him, and not a trouble, to be of any assistance to the Central Association. (Hear, hear). He had lived in the profession for twenty-nine years and he believed he would die in it. (Applause).

Mr. E. J. BOLTON (Athlone) moved a vote of thanks to their Treasurer, Mr. Howard, which was cordially tendered.

Mr. HOWARD said it was quite unnecessary to thank him ; it was only a pleasure to him to be of any help to the Association. (Hear, hear). They all derived benefit from membership of the Association, but he regretted to say there were men living entirely by the profession who did not join and support the Association ; they simply sat down and criticised, but when they wanted anything they come to the door of Association to look for it. (Hear, hear.)

Mr. WINTER said they had surgeons there that evening who were not members, two ladies. (Hear, hear). They were all delighted to see them there, and he was sure he spoke the feelings of all when he said it gave the members much pleasure to see these two ladies at the meeting of the Association. (Loud applause).

Mr. WINTER then gave the toast of "The Ladies," whieh was honoured with great cordiality.

Mr. HOWARD, on behalf of the ladies, returned thanks to Mr. Winter, and the members generally. They had not seen their way to open the door and admit ladies to their ranks. He (Mr. Howard) was waiting to see if the Suffragettes would take up this matter (Laughter and applause), and was looking forward to see their esteemed "civic fathers," the Royal College of Veterinary Surgeons, open its arms (Loud applause and laughter) and welcome the ladies. (Applause).

E. C. WINTER, *Hon. Sec.*

ZULU WAR, 1879.

VETERINARY DEPARTMENT.

GENERAL REPORT.

ENGLISH HORSES.

The subject which first claims attention is the voyage of the horses from the various ports in England to Port Durban, Natal, South Africa. It was thought that the mortality on board ship would be very great, not an unreasonable conclusion, considering the length of the voyage, the season of the year—February and March—and the extremes of temperature to which the horses would be exposed during transit. It was, therefore, a great relief and a matter for congratulation to find that the casualties *en route* amounted only to 3·84 per cent. This favourable result was due to the selection of excellent transport ships—the "Borussia" excepted—to the officers and men, having a campaign before them, taking a direct personal interest in the horses of their respective corps, to the adoption of every measure that common sense suggested and science indicated to preserve the horses, and to the zeal and ability displayed by the veterinary surgeons in charge. The success attending these combined efforts was all that could be desired ; the casualties as above stated being few, and the health and condition of the horses when debarked, good.

Previous to the arrival of the horses at Durban, sheds were erected for the reception of the sick and lame, and a piece of land near the "Berea," possessing the advantages of a light dry soil, good and abundant water, and proximity to the Commissariat Depôt, was selected as a camping ground. After a short stay here horses were marched to a high undulating ground called Cato's Manor, about five miles from Durban. Placed on judicious diet, and subjected to proper exercise and attention, the horses soon regained the free use of their legs, and rapidly recovered their natural spirits and liveliness.

After staying at Cato's Manor eight or nine days, part of the force, consisting of the 1st Dragoon Guards, 17th Lancers, N/6 R.A., and Nos. 3 and 4 Companies Army Service Corps, proceeded by easy marches via Pietermaritzburg, Ladysmith, and Dundee to Landman's Drift, at which station they arrived early in May, and eventually formed part of the Second Division. The remainder consisting of M/6 R.A., Royal Engineers, and No. 5 Company Army Service Corps, proceeded to the Lower Tugela, and subsequently took part in the operations of the First Division. The march up country to Landman's Drift and along the east coast to the Lower Tugela river was effected with but little loss, and the horses, with few exceptions, arrived at the above stations in good health and condition.

With regard to campaigning in South Africa, I may here remark that, compared with his Cape brother, the English horse laboured under several disadvantages ; in the first place he was just off a voyage of six weeks' duration, was landed at the close of autumn in a sub-tropical country with a winter coat on, and this when shed was succeeded by a summer coat when a winter one was required ; was fed partly on grain, to which he was unaccustomed, and worked in broken and difficult ground foreign to his experience. Another great drawback was the difficulty experienced with reference to

grazing. Encumbered with accoutrements of a more or less complicated character, it was a work of time, and, if the enemy was near, of danger, to "off saddle" for the purpose of grazing. Unused to much freedom, it was feared that if turned loose he would stampede; if led in hand, the inexperience of the man prevented the horse selecting the best and most palatable grass; if knee-haltered and turned loose he would not, thus hobbled, take kindly to grazing, and would, if permitted, return to the camp. About stampedes, I would like here to mention that one was stopped at the commencement by the officer commanding having the presence of mind to order "feed" to be sounded; the attention of the horses being diverted by this appeal to their stomachs they immediately returned to the picket lines.

From the foregoing it will be seen that the training of the English horse operated unfavourably against grazing being carried out in a satisfactory manner; nevertheless, officers commanding corps availed themselves of every opportunity for grazing their horses; on line of march, when halts permitted, the bits were removed from the horses' mouths, and an hour's grazing indulged in. In standing camps the horses were grazed daily so long as the grass lasted; this as a rule was not long, the thousands of oxen with each division soon ate it up, or rendered it unpalatable by trampling on and soiling it.

From November to June grass is abundant in most parts of Natal, the Transvaal, and Zululand: in future campaigns, should English horses be employed, it would, if time permitted before taking the field, be desirable to institute grazing parades, it would at the same time be good practice for the men, horses thus educated would be less liable to stampede ,would be able to procure, even in the field, an amount of food that would enable them to dispense with a portion of the hay ration. These remarks, however, apply chiefly to the draught horses, as the cavalry, owing to the nature of their duties —scouting, signalling, reconnoitring, etc., have less time at their disposal for grazing.

In future campaigns in South Africa it will have to be borne in mind that, in order to maintain the health and efficiency of English horses, it is imperative that they be liberally fed on suitable food. Experience gained during the Zulu War convincingly demonstrated this to be the case. Up to the 25th May the horses generally were in excellent working condition; on that date, however, the ration for the cavalry, artillery, and Army Service Corps was reduced to 8lbs. of grain a day for the former, and 12lbs. of grain per diem for the two latter. The issue of other kinds of forage was stopped. At this time the hard work of the campaign was beginning, the duties of the cavalry being severe and prolonged, sometimes the horses were under saddle eight or nine hours a day, moving about the greater part of the time, and carrying from 18 to 20 stone. Placed on this utterly inadequate ration, the effect on the cavalry horses was most marked; in fact, the rapidity with which they lost flesh was startling and almost marvellous. It was thought that by supplementing this 8lbs. grain ration with mealies, mealie cobs, Kaffir corn, corn stalks, etc., that the hay ration could be discontinued with impunity; but owing to the heavy duties, and consequent lack of time for foraging, the supplies obtained in this way were necessarily irregular and precarious. The result to the cavalry horses was deplorable. Before the campaign was ended some of the delicate horses were on the verge of starvation, others in a very debilitated condition, and many temporarily unfit for further service. It is, of course, the veriest platitude to say that unless income is equal to expenditure a deficit is the result; and yet, during a portion of the campaign, in the matter of feeding and working the horses this simple fact was overlooked or forgotten.

The number of English horses landed at Durban or Simon's Bay for the Zulu War amounted to 2,073. The losses from all causes, viz., killed in action, missing, died of disease, tulip poisoning, etc., amounted between 20th March (the date of landing of the first batch) and the 30th September, to 16 per cent. Due consideration being given to the effects produced by severe work, exposure, and at times insufficient rations, the rate of mortality cannot be regarded as excessive.

Colonial Horses.

The Colonial horse, though small, is a hardy, wiry animal, capable of prolonged and severe exertion; he possesses plenty of courage, and will travel long distances day after day on a very small amount of grain. In civil life it is the custom at the end of a day's journey to give him a few pounds of Indian corn, and then turn him out on the "veldt," where he is left until again required. As regards physique, it would strike those accustomed to English horses only that his appearance was mean, and that he was too deficient in size to be of much service; further and closer observation would, however, show that as a rule he possesses well-formed and powerful shoulders, fairly developed loins and hindquarters, and that the joints of both fore and hind legs were strong, compact, and of good shape, the circumference of the legs below the knees and hocks above the average, the size and conformation of the feet good, and the horn of a texture well calculated to withstand the wear and tear of ordinary life. On the whole he is a very useful and valuable animal for military purposes, his experience gained by being grazed from the time he is able to eat grass until put to work, by developing caution, quickness of perception, and intelligent activity, renders him a safe animal over dangerous, if not impracticable country, to most newly imported horses. This early training also eminently fits him for the duties he is called on to perform in a campaign against savages in the broken, hilly, and difficult country found in South Africa. Another great advantage derived from the employment of Colonial horses is, that at the end of a day's march they can, without fear of stampeding, be turned loose and grazed in troops or mobs—an important consideration in a grass country.

As an instance of the endurance and capabilities of Colonial horses, I may mention that in October last, the horses of N/5 R.A. marched—bringing their guns (7-prs.) with them—from Heidelburg to Pietermaritzburg, a distance of 320 miles in 14 days: on arrival at the latter station they were, with few exceptions, fresh and in good condition, and when sold the following week realised within a pound a head their cost price. If it were thought necessary, other performances equally good could be enumerated.

The horses on which the men belonging to the irregular corps and flying column were mounted, and also those employed in other capacities during the war, performed the work demanded of them in a satisfactory manner.

It is true that some of the remounts purchased for the flying column were not of a class or quality the most desirable, but consideriug the conditions under which a portion of the horses were purchased, this was was inevitable, and the requirements of the service at the time were of so urgent a nature as to afford a small margin for the rejection of unsuitable horses.

The weight of man and kit in the "flying column" and irregular corps was 13½ stones.

About 4250 horses were purchased for the Zulu War at an average cost price of £23.

As the Transport Service occupies a prominent position in all campaigns, and as the health and condition of the animals furnishing the draught and carrying power are matters of supreme importance, perhaps I cannot do

better than now submit a few remarks regarding the animals used for transport purposes in South Africa, and, with permision, will begin with

THE OX.

Opinions with regard to the animal best suited for transport purposes in Natal, Zululand, and Transvaal are many and diverse. By some the horse and mule, by others the ox, are considered to be equal to all the requirements demanded of transport animals in the field. Much could be said for and against the employment of either horse, mule, or ox.

The great advantage derived from the employment of oxen is that they feed themselves, and require no provision in the way of grain and forage made for them along the lines of communication and operation. Their pace is sufficiently fast to keep up with infantry, and also with cavalry, unless the latter are thrown out in advance of the former for the purpose of scouting, reconnoitring, or to veil the movements of an Army.

As a draught animal, the ox did good service in the Zulu War. It was found that if allowed ample time to graze, and judiciously worked, he could cover from 15 to 20 miles a day, day after day, without knocking up The manner in which he drew heavy loads over rough ground, across rivers and drifts, up steep and long hills, was marvellous. It was found that he could work on roads impracticable for English draught horses. In the hilly country encountered in parts of Zululand, the latter were unequal to the task of dragging the loaded Army Service Corps wagons, and were sent back from the Upoko river to the depots of supplies at Koppie Allein and Landman's Drift.

In selecting oxen for transport work, it should be borne in mind that oxen live and thrive if worked in or near the localities in which they are bred. If possible, up-country oxen should not be worked on the coast line, as it is found that the change of climate and grass produced loss of condition and disease. None but trained oxen should be purchased.

Oxen should not be put to work before they are four or five years old. The age up to which oxen are serviceable depends on the care and attention they receive and the quality of the grass on which they are grazed. In localities where the grass is good they will work until they are 16 or 17 years old ; if the grass is of indifferent quality, until they are 11 or 12 years old.

An ox can travel at the rate of 2½ to 3 miles an hour, and can work from seven to eight hours a day. Oxen were not shod during the Zulu campaign.

Oxen cast their coats about September, when the spring grass is coming in, and get their winter coats in March. As the tone and vitality of the system is somewhat lowered during the coating, and the ox thereby rendered more susceptible to external influences, it is incumbent when this process is taking place that the work should be reduced, and measures taken to prevent exposure to wind and rain.

During each year oxen should have three months' rest, otherwise their legs become stale and fill at the joints. Bull calves are emasculated when about 10 months old.

Bovine tolerance of wet with cold weather is small, and if oxen are exposed to it when in low condition they die off rapidly and in great numbers. When wet weather prevails, it is advisable to knock off work altogether, and turn the oxen into bush or sheltered ground.

As an illustration, showing the disastrous effects attending the working of oxen in wet weather, I may state that in the latter part of June a convoy of 100 waggons was ordered to proceed from Fort Newdigate to Fort Marshall, and it was raining heavily when the convoy started. During the journey about 100 oxen died and 400 were disabled.

Another cogent reason why oxen should not be worked in wet weather is that the yoke causes "sore neck." This is attended with far greater disadvantages than saddle or collar galls in horses, inasmuch as oxen become temporarily unserviceable in consequence of that part of the neck on which the yoke bears becoming excoriated, and the subcutaneous tissues tender and tumefied. Sore necks are caused in this way: the secretions from the skin, which in dry weather keeps the yoke to a certain extent lubricated, is in wet weather washed away by the rain, and the yoke being thus brought in direct contact with the neck causes friction, with the result as above stated. The rain also produces flaccidity of the skin, which renders it more liable to abrasion.

In the way of prevention, that part of the yoke, and the skin on which it bears, should in rainy weather be well oiled or greased every hour so long as the oxen are working.

In the winter months, owing to the grass being scanty and deficient in nutriment, oxen are not able to perform so much work as in summer. Generally speaking, winter grass is only sufficient to keep oxen alive, not to work on. It becomes poor about the latter end of June, and often in the first half of that month, and such was found to be the case along the line of march in Zululand. Cattle fall off in condition from the beginning of July until the spring grass is showing in September. This remark applies generally to cattle fed on grass, and not to transport oxen only. When "trekking" in the winter, oxen should be "outspanned" near rivers, brooks, spruits, low lying ground, or bush country, as in these places grass is more abundant, and of a more nutritious character. Oxen should be watered at least three times a day in summer, and twice a day in winter.

Transport riders, when engaged on private business, generally travel at night. As a rule they inspan at sundown, work four hours, then outspan for four hours, and then inspan until sunrise. By this system of trekking the work is done during the night, when it is cool, and the oxen have the whole of the day to rest and graze. This sensible method could not, however, be carried out in time of war, nevertheless a modified form of it could be practised on the lines of communication, and in those parts of the country where there was no danger of being attacked by an enemy. Oxen should not be inspanned for more than four hours consecutively. I would suggest that on a campaign, when the enemy was not within striking distance, the hours of work be as follows :

Inspan at	3 a.m.	Outspan at	6 a.m.
„	8 a.m.	„	10.30 a.m.
„	3 p.m.	„	5.30 p.m.

and graze the oxen until 9 p.m., when they could be brought in for the night.

When within striking distance of the enemy, graze from 6 to 7.30 a.m., then

Inspan until	10.30 a.m.	Outspan until	1 p.m.
„ „	4 p.m.	„ „	6 p.m.

the oxen then to be brought into the laager, or collected for safety for the night.

When camping for the night, advantage should be taken of rises in the ground to shelter the animals from cold winds, hail and rain. In Zululand (example, Intojaneni Heights), there is often excessive cold and rain on high mountains, while it is comparatively warm and fine somewhat lower down.

Over-work, insufficient food, and exposure are potent factors in producing the heavy mortality which usually obtains among transport animals in the field. Overwork is for many reasons to be deprecated ; it soon renders oxen useless, and unless there is an unlimited supply to draw upon as "food for transport," the transport organisation collapses, and with it the mobility of the Army. The facts that oxen are slow in recovering from low condition, that when in this state draught

power is reduced by one-half, and that cold wet weather kills them off like flies, should be ever present in the minds of the officers in charge.

It is advisable to have two spare oxen with each span, to replace the sick or lame. A sick or lame ox should be removed from the span at once, as he does not represent any draught power, is, in fact, "a passenger," and has to be dragged along by the others.

Oxen should be allowed to graze at least six hours a day; this, unless the grass is good and plentiful, is insufficient. When practicable, oxen should be grazed an hour before starting in the morning; this would enable them to ruminate (chew the cud) *en route*.

Conductors should be men of great experience, and in every way trustworthy; men of this stamp can only be obtained and retained by liberal payment. It would be good economy so to pay them as to make it worth their while to prefer this to any other work; it would ensure the utmost care and attention they could give, being bestowed on the animals in their charge.

During the campaign, hundreds of oxen were in charge of officers whose previous training was not calculated, nor intended to fit them for this kind of work. They must have found the supervision of transport animals an uncongenial duty, and alien to their feelings and aspirations. I need not say of these officers that those who possessed a high sense of duty, initiative capacity and fertility of resource, and there were many such proved valuable acquisitions to the Transport Department.

It is often assumed, or taken for granted, that anyone is capable of supervising trains of transport animals; facts and experience prove the contrary. There is no royal road to learning these duties; a transport officer cannot be improvised by the stroke of the pen.

I have been informed by colonists that they look upon oxen employed in the service as "doomed," giving as a reason for coming to this conclusion that the management of oxen, the amount of labour they can perform, the hours of rest and feeding they require are so little understood by Army Officers. Firm in this belief, the colonists were not too ready to let their best cattle to Government; on the contrary, some of their worst found their way into Government employ; and as the compensation given for losses was liberal, and often exceeded the market value of the animal, the owners or agents did not take so much care of their oxen as they might have done, and many in consequence died or strayed. On the other hand, when owners let their best spans and accompanied them on convoy or in the field, the oxen generally retained their condition, and the rate of mortality was low.

I would recommend that competent and disinterested persons should examine each span at the time of hiring and fix the average value of the oxen in it; the price or value arrived at to be registered, and the compensation for any one ox not to exceed the average price of the whole.

It is most important that trained men should be employed for this purpose. Driving is an art not easily acquired; great experience and skill is required to make each ox do his fair share of work. If the driver is negligent or incapable, the greater part of the work is done by the "willing" oxen, these, as a matter of course, soon knock up, and the span becomes unserviceable.

It is necessary to carry a certain amount of spare gear to replace that broken or worn out. Tools for repairing slight breakages in the gear or wagon should also be carried. Ample supplies of grease for the wagon wheels should accompany each wagon.

Oxen, especially those in poor condition, are infested with ticks. As these pests attain a large size and require a considerable amount of blood for their sustenance, their presence is not only objectionable but injurious. McDougall's sheep dip is an effectual remedy. A tin of it should be carried, and drivers instructed how to use it.

Wagons best suited for military and general transport are wagons built in the colony called "buck wagons." They are so-called because the rail attached to the walls or sides of the wagon is named the "buck." These wagons are capable of carrying a load weighing 7000 or 8000 lb. These wagons, though immensely strong, are sufficiently flexible to yield to the inequalities of the road. Without this quality of flexibility, in crossing rivers, spruits, and mud-holes a wagon would soon become so strained as to be serviceable.

The American mule wagon is too rigid for rough work, and the arms and axles are, as a rule, not strong enough to support the weights carried when travelling over rough roads. It is, however, superior to the service wagon. The Army Service Corps wagon is not suited for transport work in Natal. It possesses the fault of being too rigid; its sides are too high, and in comparison with its weight its carrying capacity is small.

An opinion is current among the colonists that, owing to the extensive ravages caused by lung sickness, redwater, and in later years by drought, cattle are slowly but surely decreasing in numbers. Pleuro-pneumonia, or lung sickness as it is called in the Cape and Natal Colonies, was introduced into Cape Town about twenty years ago by a bull imported from Holland. From Cape Town this disease spread north, and in a few years reached the Orange Free State and Transvaal, and by transport riders was brought down south to Pietermaritzburg and Durban; from these centres of trade it was carried by traders into the Zulu country, Basutoland, etc., eventually spreading over the colonies and neighbouring States. The law passed through the Natal Legislative Council "for the better prevention of lung sickness among the cattle of this colony," appear to be sufficiently stringent and comprehensive; but owing to unfenced farms, ignorance and apathy of the natives, some of them large cattle owners, and to the cattle traffic along the main roads, it is difficult to enforce it, and there appears every probability of the disease continuing its ravages for years. Redwater is a much more fatal disease in this colony than in England, and yearly kills off scores of cattle.

At one period Natal was considered the wettest part of South Africa. The last five or six years, however, have been more or less years of drought; the cause is unknown, as there is as much forest and bush now as there was twenty years ago. Drought is more fatal to cattle than to sheep; the consequence is, that farmers are now stocking their lands with sheep, and many of them have given up cattle breeding altogether.

Before, during, and since the campaign, 36,000 head of cattle were employed; of this number about 10,000 died. This enormous mortality was caused by overwork, insufficient food, disease, wet with cold weather, prolonged occupation of camps, unhealthiness (especially as regards up-country cattle) of the coast line, mismanagement through ignorance, and, I am afraid, in some instances carelessness. Overwork was in a measure due to military exigencies; insufficient food to the scantiness and poor quality of the winter grass; artificial food was seldom obtainable; and to the number of hours oxen were inspanned at a time without food. Diseases most fatal and prevalent were "lung sickness and redwater.

The mobility of an Army, its supplies for men and horses, its fighting power, its very existence, depend on the efficiency of its transport. The paramount importance of the transport being conceded, it follows that the primary object to be attained is to keep it in as efficient working state as possible, and this can only be done by making use for this purpose of every available instrument within reach.

The services of officers belonging to the Veterinary Department could be utilised with great benefit to the

transport, and enormous saving to the public. These officers have received a training which especially qualifies them for the supervision of cattle as well as horses; they are acquainted with the diseases of oxen, have a knowledge of how much work they can perform, and how much grazing and rest they require.

I would, therefore, propose that in future operations veterinary officers should be appointed to each division, and others placed on the lines of communication between the base and the front for the purpose of exercising a general supervision of the oxen, and to give advice as to their working, feeding, watering, and general management. To enable them to do this effectually they would have to be invested with sufficient authority to ensure their suggestions and advice being carried out. I need not remark that only energetic officers, possessed of considerable experience, knowledge, and tact would be eligible for these appointments; and as the duties would be of a most arduous character, I would recommend that they be liberally treated.

(*To be continued*).

THE CYCLOPEDIA OF SPORT.—Edited by the EARL of SUFFOLK AND BERKSHIRE. New and enlarged edition, with illustrations in colour and black and white. Vol. I. Parts III., IV., V., VI. Price 1s. net. each part. (William Heinemann, London.)

Taken altogether, the four above-named numbers of of this cyclopedia contain much varied matter which will interest sportsmen of all description, and something of service to the more serious reader. The latter is catered for in the first of the numbers under notice—Part III. of the series—the main feature of which is an interesting account of automobiles as they appear at the present day. Much of the remaining matter relates to the various wild animals of importance to the sportsman, many of which only concern the traveller abroad. Such are those included in the long article on "Big Game," and many other foreign animals, as the wild boar and chamois, which are dealt with in separate articles. The inclusion of such unpretentious British fauna as the bream and chub, on the other hand, shows that our indigenous sporting resources are not neglected. As far as indoor pastimes are concerned, decidedly the two most important sections in these numbers are the long articles on billiards (including pyramids and the different pool games) and boxing. The long article upon coursing, another subject of personal interest to the English sportsman, commences towards the end of Part VI., and is still unfinished. As might be expected it is copiously illustrated. W. R. C.

Diphtheria in Fowls.

Diphtheria in fowls is a disease which possesses a peculiar interest. Not unlike human diphtheria in respect of the lesions which it causes in the mouth and the eye, it yet bears a character of its own, for it is distinguished by the extreme chronicity and waywardness of its course. Several organisms have been accounted responsible for its origin, and amongst these the most likely seems to be that isolated and described by Bordet and Fally three years ago. The organism is remarkable for its very small size and the difficulty of getting it to grow on artificial media. It refuses to grow on ordinary and even on most blood media, and under the most favourable circumstances as yet discovered a hardly appreciable growth is the most that is obtained. The difficulty of getting pure cultures is very considerable. It is impossible to do so from the mouth, and the most successful method hitherto devised is to break up one of the mucous patches in water, dip a sterile thread in this, and pass the thread between the closed eyelids. A comparatively pure culture can be obtained from the conjunctival lesion. The medium used is the same as that employed by Bordet and Gengou in the case of whooping-cough. It contains rabbit's blood, and, curiously enough, gives better results than a similar medium containing hen's blood. Under the highest magnification the microbe appears as little more than a point, although occasionally it assumes the form of tiny rods. It has a tendency to form large clumped masses. Its resisting powers are considerable, and it retains its virulence even after several months' growth on artifical media. For some time after the discovery of this organism there was a doubt as to whether it actually multiplied in the diphtheritic lesions, but the authors are now able to announce that this certainly does occur. Attempts to produce immunity have been made, but the results have not yet been published.—*B. M. J.*

Cruelty Prosecution at Caxton—Ear-Clipping Sheep.

A case of great importance to owners of sheep was dealt with at the Caxton Petty Sessions, on Friday, October 7th. The magistrates present were: Sir J. J. Briscoe (in the chair), Major C. W. Stanley, Mr. A. S. Orlebar, Mr. W. Randall and Mr. J. K. Paine.

The R.S.P.C.A., at whose instance the summonses were issued, was represented by Mr. Stuart Bevan (instructed by Mr. S. G. Polhill), and Mr. H. St. John Raikes (instruced by Mr. S. J. Miller) defended.

In opening the case for the prosecution, Mr. Bevan said that proceedings were taken under Section 2 of the Cruelty to Animals' Act.

The first witness called was P.C. Payne, who said that on July 22nd he was watching sheep being dipped in a field at Kingston, when he saw Lawson with a kind of machine taking pieces out of the right ears of the lambs. Witness told him it was very cruel to cut the lambs' ears like that. Lawson made no reply, and continued his work. He was cutting pieces out in the shape of a "V," about half-way down the right ear. There were forty lambs, probably about six months' old. As each lamb was marked in that way it was put in the dip. When they came out their right ear dropped, and they each continued to shake that ear. Witness considered they were suffering, and that the practice was cruel. He communicated with Inspector Laird, of the R.S.P.C.A., and on the following day went to the field with him. The right ears of the lambs were then drooping, and they were shaking them. There was blood on the right side of the head. Witness and the Inspector measured the clips, which averaged ⅜in. to 1¼in., and were cut into the cartilage of the ears. When witness went to the field on the 27th with the inspector and Mr. Bennett he noticed the same thing about the lambs. They caught one, and Mr. Bennett examined its ear. He pulled the scab off, and there was some white matter on it. Mr. Ingle was present and saw it.

Cross-examined, witness said he had not had much experience of sheep.

Have you seen their tails cut?—Yes.

Do you consider that cruelty? Witness hesitated for a time, and when pressed said he should not, because lambs would not feel so much in the tail as in the ear.

Is that your opinion as a policeman or an expert?—I am not an expert.

In reply to further questions, witness said he had seen pieces taken out of the ears of lambs with a small punch, but did not consider that cruel because they were small lambs.

The smaller the lamb the smaller the feeling?—Yes.

The larger the lamb the more it feels?—Because when they punch the tail it does not go into the cartilage as the machine did.

What do you know about the cartilage?—It is sensitive.

Inspector Laird, of the R.S.P.C.A., said that on Saturday, July 23rd, he went with the last witness to the

field at Kingston and saw Lawson. The lambs were from six to seven months old. Witness asked Lawson for an explanation of the cutting of the lambs' ears, and he replied that Mr. Ingle told him to cut a piece out for a brand with the machine. He (Lawson) certainly thought it was cruel, but what his master told him to do he had to do. Witness drove the 40 lambs into a barn, where he examined them separately, and found that pieces had been taken from the middle of their right ears. Several lambs had blood upon their ears, and all stood with their ears "lopped." They were continually shaking them. Witness compared the ears, and found one swollen and very hot. He measured the incisions, the smallest being ⅝-in. and the largest 1¼ in., right into the ear. He saw Mr. Ingle the same evening, and read Lawson's statement to him. Witness went to see the lambs again on the 27th with Mr. Bennett. Mr. Ingle was also present. Witness asked the latter for facility in collecting the lambs, and he said, "Had I been here the other day you would not have got them in the barn. There they are; catch them." One was caught and examined by Mr. Bennett in the presence of Mr. Ingle, and matter was pointed out to him coming from the right ear where one of the cuts was. Mr. Bennett removed a portion of the scab: there was matter underneath. The lamb was, like the majority of the rest, carrying its ear down.

The instrument was produced.

Cross-examined: Witness had not had a great deal of experience with sheep.

Do you consider cutting the ear is cruelty?—Cutting the cartilage is.

Do you draw a distinction between cutting the skin and the cartilage?—Yes. Immediately the cartilage is touched snppuration sets up.

You think it would be possible to mark the sheep, using the ear mark, so that the mark could be seen at any distance, without cutting into the cartilage?—Yes. There are certain portions of the ear in which a small punch can be put without touching the cartilage.

Do you consider cutting into the cartilage constitutes an act of cruelty?—Yes, because the cartilage is a sensitive structure.

Mr. Sampson Bennett, M.R.C.V.S., said he had practised in the county for 20 years. He examined the 40 lambs on July 27th. They were 4½ months old. The whole of them carried their heads on the right side, the cause being that a piece of cartilage had been taken from the ears. They were nndoubtedly suffering pain, because on examination he found extensive suppuration. On cleaning off the discharge, he saw that the whole of the cartilage was exposed, and there was a raw surface. It was quite impossible to clip the ears in the position these were without touching the cartilage. If the cartilage were interfered with, they got extensive suppuration, and that was one of the worst things they could encounter. Professional men always liked to give the cartilage a miss if possible. In passing through the dip the wounds would be exposed to an arsenical preparation. If that came into contact with a cut, there would be serious trouble. He was familiar with the methods of marking sheep in that district for the purposes of identification, and should think red paint was the best. It lasted a long time, and it was the general practice. There was no necessity for clipping the ears of the sheep, and it would undoubtedly cause pain. Passing the animals through the dip would increase it, as arsenic was one of the most dangerous drugs one could meddle with. He had never seen such a case of extensive mutilation, though he had heard of ears being marked by taking a little bit out of the tissue with an ordinary minute punch.

The Chairman: Have all dips arsenic in them?—They are no good if they have not. Some are supposed not to, but in 99 cases out of 100 they have.

Cross-examined: The ear-marking was sometimes done with a knife, and called a "split," but he had never seen it done with shears.

In order to see whether there was suppuration, you took the scab off one lamb's ear?—It was falling off.

Was not the ear in the ordinary process of healing—No.

You think all the lambs were equally affected?—Yes, and it would take at least a couple of months before those ears were healed.

You stake your professional reputation on that?—Yes.

If anyone were to say those lambs were examined on the 28th and there was no sign of suppuration——?—I should disbelieve them.

And that the wound on one lamb had been interfered with improperly by taking the scab off?—I should disbelieve it. Cartilage never healed in that time.

If it were to be stated that on the day following your examination there was no undue swelling or inflammation?—That's what you don't get. You may have excruciating pain, but no swelling.

You don't agree ear-marking is necessary?—No.

Do you know it is recommended by the Board of Agriculture?—I can't help what they say.

Questioned with referenee to the instrument witness said "I think the man who invented that ought to have used his brains in a better direction." He regarded sheep as timid animals. They should be caught at certain periods of the year, and soon become accustomed to it.

You say it is cruel to dip them after the ears have been clipped?—It does not want a second consideration.

I put it to you whether the effect of the dipping would not be both antiseptic and whether it would not also have the effect of keeping the flies away from the wound?—I have never known arsenic used as an antiseptic yet.

What would the effect be?—It would keep the flies away, and soon take the animal away if you used sufficient.

In reply to questions by the Chairman with regard to suppuration being caused, witness said he had known ladies who wore earrings have to have the lobe of the ear pierced. If the cartilage was touched they would have a diseased ear for a year.

By the Clerk (Mr. S. G. Wilkinson): Witness was surprised any instrument like the one produced was in the open market for people to use.

Mr. William Plomley, M.R.C.V.S., of Peasemarsh, Sussex, said he was for 28 years inspector of prevention of cruelty to animals at Rye market. At different times 2000 to 3000 sheep passed through his hands. He found the marking of sheep on the body quite satisfactory. Ear-marking used to be the way, but in his district there was not much of it done now. He had never seen any incisions 5-8th or 1¼in. in length, in the middle of the ear. It was not necessary. He had never seen an instrument before like the one produced. He had seen smaller ones, and should think this one had been used for marking calves. With the small ones the skin was just penetrated. If the cartilage were cut it caused excruciating pain for the time being and possibly mortification. This was not a fit instrument for clipping the ears of sheep with. The dipping afterwards would possibly increase the pain, but he had never seen it done, as in the Romney Marsh district he had never seen sheep ear-marked. Four and a half months was not a proper age for lambs to be marked with a small clip. Incisions of the size mentioned were not necessary for identification purposes.

Cross-examined: You have seen some young sheep outside the Court. Did you observe their ears were cut?—Yes.

Improperly cut?—No, I should not think it was a case of cruelty there.

Mr. Raikes: I need not trouble you any more.

P.C. Payne said he had seen the lambs outside. Some were marked on the left ear and some on the right.

Mr. Raikes: Those marked on the left ears were brought for comparison.

Mr. Bevan, to witness: It is suggested those marked on the right are fair samples of the lambs you saw on July 22rd?—They are not fair samples.

Mr. Bennett, recalled, in reply to the question as to whether the lambs ontside were a fair sample of the 40 he saw on the farm as far as the size of the clipping went, said they were not, as the skin had healed over.

Insp. Laird, recalled, said the clippings on the ears of the sheep outside seemed much smaller.

This closed the case for the prosecution, and the Bench, counsel and witnesses adjourned to view the sheep outside, Mr. Bevan being unable to admit they were the same as those in respect of which proceedings were being taken.

The Defence.

When the Court resumed, for the purpose of establishing the identity of the sheep, Mr. Raikes called

Frederick Sparkes, in the employ of Mr. Ingle, who said he had had the 40 sheep under his care. He received orders to bring some of the sheep to the court that day, and with the assistance of the horsekeeper drove them into the float. They never handled one. They ran in from the flock, and were not picked out.

The Chairman: Do you think it was cruel to clip the ears like this?—I could not say. I never saw anything wrong with them.

By Mr. Raikes: After they were dipped they fed all right.

Cross-examined: He did not notice any blood on their ears, or that the right ears drooped.

Mr. Ingle, the defendant, was next called. He said he was a farmer and corn merchant. He had not kept sheep until this year. When he bought the 40 he was informed that notice had been given the police with regard to dipping them. It was suggested to him by the shepherd of the man who sold them that they had better be marked at once as they were going to be dipped with other lambs, and might get back, and so cause confusion. He asked Lawson whether he had had any experience of sheep and of marking lambs, and he said he had. He said he could mark them with the instrument produced. Witness told him he could take a piece out of the ear, but gave him no special instructions. Witness did not see the marking done. He knew a member of the police force would be present at the dipping, so that had he wanted to ill-treat the lambs he would not have chosen that moment. He was astounded when Insp. Laird told him he had been cruel in treating them that way, and pooh-poohed the idea, as he had no wish or inclination to be cruel to any animal he had on his place. He saw the sheep on the 23rd. They did not appear to be in any pain. Lawson said they were going on all right.

Continuing, witness said that when the Inspector and Mr. Bennett visited the farm on the 27th the latter caught a sheep. Witness saw him deliberately pick the scab off and squeeze it, and a little blood, nothing else, came out. He remarked "Do you call this ear all right," and witness said he called all the ears all right. Mr. Bennett only handled one lamb. Witness had them examined the day after by Mr. Runciman.

Cross-examined: With regard to the instrument, witness said he bought that for marking sheep, pigs, and cattle. He was told it might be used for sheep.

Did you know the dip contained any poison?—No.

Mr. J. G. Runciman, M.R.C.V.S., and also a Fellow of the Edinburgh Medical Association, said he had practised in Cambridge for four years. On July 28th he examined each of the 40 lambs. A "V"-shaped piece was clipped out of the bottom lobe of each right ear. A piece of the conchal cartilage had been removed. The sheep appeared perfectly healthy and well. He found no evidence of ill-treatment. In fact, the ears were just as one might expect to find them after an operation had been performed with a clean instrument. There was no more suppuration than there would be under ordinary conditions. There was no undue swelling or inflammation. The edges of the ear on one of the lambs was more swollen than others, and the scab was a young one. It appeared as though the original scab had been removed. The ears were healthy, and the lambs were quite fit and not in pain. Each carried its ear naturally as it should have done. He should say they were marked in an orthodox manner. All the pedigree sheep he examined were ear-marked, as were the sheep for export. They were clean cuts, and were not of an extraordinary size. The ear of a sheep was not a very sensitive organ. The skin was sensitive, and the conchal cartilage was non-sensitive. The pain was confined to cutting through the skin. He considered the dipping was antiseptic, and was what any surgeon would do. It would cause smarting, but not for any length of time. It would prevent flies attacking the wound, and kill any organisms. Marking the sheep on the fleeces would not last long, and if they were fattening sheep they would be taken off their feed by being caught. With regard to the instrument, he should say it could be used for nicking sheep's ears. It was in a clean and good cutting condition.

Cross-examined: The instrument was for pigs and was also used for marking cattle. He was prepared to say that arsenic was antiseptic. The lambs were quite well when he examined them. They would shake their heads on being released after the operation, but not again. There was an ordinary amount of suppuration on July 28th, but not enough to cause "sloughing."

I suggest to you that something more than the tissue had been cut, and the cartilage had been?—I suggest you are wrong.

The moment you get into the cartilage you get pain?—No, it is non-sensitive. The skin is where you get the pain.

There was, added witness, ear-marking in several different positions. Everyone had his own particular mark.

Mr. K. J. J. Mackenzie, University Lecturer in Agriculture, and Director of the University Farm on Gravel Hill, Cambridge, said he had been connected with farming since 1887, and had also studied veterinary surgery. He was acquainted with ear-marking of sheep and lambs. He examined 39 of the 40 sheep and found them in excellent condition, not only in good flesh, but they had what was known as the "bloom" or "sheen" on the fleeces still. Had the sheep suffered a great deal of pain there would emphatically have been a set-back. The marking could be done by a shepherd or anyone with experience of sheep. There was practically no pain caused by the use of a nicking instrument. The dipping after the clipping would add pain, but to counterbalance that, the dipping and marking together would save another handling, which would be an advantage. Another advantage of dipping would be to keep away the flies. The average depth of the nicks on the lambs' ears in question was ½in. They were all absolutely clean cuts.

Witness produced tracings of sheeps' ears, showing the size of the clippings. None of the latter approached 1¼in. in depth. The instrument used, he added, was an unusually large one, but was perfectly suitable, and the great advantage was that it could be kept clean.

Witness was examined at some length by Mr. Bevan on the tracings and measurements of the nickings which he had made with a florin. Continuing, he repeated his assertions that nicking caused less pain in the long run than any other form of marking.

The Chairman: You could not describe nicking as cruelty to the animal?—If you mean unnecessary cruelty I am sure it does not.

The Clerk: What pain there is is necessary?—Yes.

The Bench considered they had heard sufficient evidence, and retired. On returning into Court, after an absence of about five minutes, the Chairman said they had decided to dismiss the case. They thought, however, that the instrument used was scarcely a desirable one, and that the dipping ought not to follow the marking.—*Cambridge Daily News.*

Personal.

LOWE.—At Saharanpur, India, on Sept. 20th, the wife of Capt. W. Cecil Lowe, A.V.C., Army Remount Department, of a son.

ARMY VETERINARY SERVICE.

Extract from *London Gazette*,

WAR OFFICE, WHITEHALL, Oct. 21.

Col. R. Pringle, C.B., D.S.O., to be Director-General, and is granted the hon. rank of Major-General. Dated October 15.

ARMY VETERINARY CORPS.

Lieut. J. Adamson to be Capt. Dated July 9.

OBITUARY.

R. READ, V.S., 10 Lowergate, Clitheroe.

Mr. Read died on Oct. 16th, from bronchitis and heart failure. Aged 73 years.

An intimation has been received of the death on September 8th of Mr. G. W. GALT, M.R.C.V.S., of the Service Sanitaire Maritime et Quarantenaire d'Egypte, Alexandria. Mr. Galt graduated from the London College in December, 1900.

THE SO-CALLED NEW SCLEROSTOMES.

Sir,

I have read with interest Mr. Noel Pillers' criticism upon the note you published from me on a new (?) Sclerostome, and I have come to the conclusion that Mr. Pillers' own remarks upon the subject afford the best answer to his strictures. Apparently he is not in a position to pronounce finally on the Sclerostomes, and I shall await with interest what he has to say when his own observations are ripe for publication. I am fairly acquainted with the work that has been done on these parasites, but I do not think that where admittedly there are numerous varieties I was wrong in describing, however roughly, a variety which I had not previously met. I was not responsible for the nomenclature which Mr. Pillers condemns: I wrote Equinum *v.* Armatum, but the printer's reader appears to have missed the meaning. As to the subject from which I obtained the specimens, no "red or wire worms" were found.—Yours faithfully, S. Tetracanthum

A. E. METTAM.

Royal Vet. Coll., Dublin.

COMMUNICATIONS AND PAPERS RECEIVED:—Capt. W. C. Lowe, Prof. McCall, Messrs. C. W. Townsend, D. Young, W. E. B.

The Yorkshire Evening Post, The Kentish Independent.

DISEASES OF ANIMALS ACTS 1894 TO 1903, SUMMARY OF RETURNS.

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Counties Affected	Sheep Scab.	Swine Fever.	
	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Animals Attacked	Out-breaks	Out-breaks.	Slaugh-tered. *
GT. BRITAIN. Week ended Oct. 22	26	30			4	11		2	41	486
Corresponding week in 1909 ...	25	28			10	20		3	28	252
Corresponding week in 1908 ...	19	21			11	29	Kent 2	8	32	213
Corresponding week in 1907 ...	19	29			12	27		7	32	210
							London 8			
Total for 43 weeks, 1910	1204	1428	2	15	319	928		361	1214	11187
							Surrey 1			
Corresponding period in 1909 ...	1072	1407			453	1588		492	1413	12699
Corresponding period in 1908 ...	899	1189	3	112	684	2113		660	1720	10545
Corresponding period in 1907 ...	897	1207			723	1647		441	2078	9889

Board of Agriculture and Fisheries, Oct. 25. 1910.

							Parasitic Mange (outbreaks)			
IRELAND. Week ended Oct. 15	...	...	...	...	...	...	2	4	2	17
Corresponding Week in 1909 ...	1	1	...	...	...	...	1	5	...	...
Corresponding Week in 1908 ...	...	...	...	...	...	...	...	2	1	4
Corresponding Week in 1907 ...	...	...	...	...	...	...	...	2	5	78
Total for 42 weeks, 1910 ...	5	8	...	...	1	2	62	375	77	1778
Corresponding period in 1909 ...	8	8	...	...	...	...	69	316	86	1561
Corresponding period in 1908 ...	7	10	...	...	...	...	34	288	148	3469
Corresponding period in 1907 ...	3	5	...	...	5	9	71	205	134	2277

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Oct. 19. 1910

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

Veterinary Societies—Addresses.

Alterations for this list must be duly notified by the Secretaries

ASSOCIATION OF VETERINARY OFFICERS OF HEALTH
Pres: Mr. J. S. Lloyd, F.R.C.V.S., Health Office, Sheffield
Hon, Sec. Mr. A. M. Trotter, M.R.C.V.S.,
Moore Street, Abattoir. Glasgow

BORDER COUNTIES V.M.S.
Pres: Mr. J. W. Hewson, M.R.C.V.S., Wigton
Hon. Sec. (pro tem.): Mr. F. W. Garnett, M.R.C.V.S.,
Dalegarth, Windermere
Meetings, Second Friday of Feb., June, and October

CAPE OF GOOD HOPE V.M.S.
Pres. Mr. J. D. Borthwick, M.R.C.V.S., Cape Town
Hon. Sec. & Treas. Mr. R. W. Paine, F.R.C V.S

CENTRAL V.S.
Pres. Mr. W. S. Mulvey, F.R.C.V.S.,
116A King's Road, Chelsea, S.W.
Hon. Sec: Mr. H. A. MacCormack, M.R.C.V.S.,
122 St. George's Avenue, Tufnell Park, N.
Meetings, First Thursday in each month, except August and September, 10 Red Lion Square, Holborn, at 7 p.m.

CENTRAL CANADA V.A.
Hon. Sec: Mr. A. E, James, Ottawa

CENTRAL V.A. OF IRELAND.
Pres: Mr. J. F. Healey, M.R.C.V.S., Midleton
Hon. Sec. Mr. E. C. Winter, F R.C.V.S., Queen-st., Limerick
Treas: Mr. P. J. Howard, M.R.C.V.S., Ennis

EASTERN COUNTIES V.M.A.
Pres: Mr. A. Holl, M.R.C.V.S., New Buckenham
Hon. Sec. & Treas: Mr. James Robertson, M.R.C.V.S.
Leo House, Stalham
Meetings, Second Tuesday, Feb. and July

GLASGOW V.M.S.
Pres. Principal McCall.
Hon. Sec. Mr. James Lowther

VET. MED. ASSN. OF IRELAND.
Pres; Mr. J. Holland, M R.C V.S., Athy
Hon. Sec: Mr. A. Watson, M.R.C.V.S.,
Municipal Buildings, Cork Hill, Dublin
Hon. Treas: Prof. Craig, M.A., Royal Vety. Coll., Dublin.

LANCASHIRE V.M.A.
Pres: Mr. T. Eaton Jones, M.R.C.V.S., Walton, Liverpool
Hon. Treas: Mr. W. Packman, M.R.C.V.S., Bury, Lancs.
Hon. Sec. Mr. G. H. Locke, M.R.C.V.S.,
Grosvenor-street, Manchester
Meetings, 1st Thursday in April, June, Sept., & Dec.

LINCOLNSHIRE V.M.S.
Pres. Mr. T. Holmes, M.R.C.V.S., Bourne
Hon. Sec: & *Treas*: Mr. C. W. Townsend, F.R.C.V.S.,
Long Stanton, Cambridge
Meetings, Second Thursday Feb., June, and October

LIVERPOOL UNIVERSITY V.M.S.
Pres: Mr. W. Woods, F.R.C.V.S., Wigan
Hon. Secs: Prof. H. E. Annett, The University,
Arnold Richardson, M.R.C.V.S.,
111 Arundel Avenue, Liverpool
Meetings, May, July, October, January.

VET. ASSN. OF MANITOBA.
Pres: Dr. W. A Dunbar, Winnipeg
Hon. Sec. & Treas: Dr. F. Torrance, Winnipeg

MIDLAND COUNTIES V.M.A.
Pres: Mr. John A. Gold, M.R.C.V.S., Redditch
Hon. Sec: Mr. H. J. Dawes, F.R.C.V.S.,
Camden House, High-st., West Bromwich
Meetings, Second Tuesday, Wednesday, Thursday, and Friday alternately in Feb., May, Aug. and Nov

NATAL VETERINARY MEDICAL ASSOCIATION.
Pres. Mr. H. Watkins Pitchford, Govt. Bacteriologist,
Pietermaritzburg
Hon. Sec. & Treas. Mr. J. B. Collyer.
Vety. Inspector Natal Police, Pietermaritzburg

NATIONAL VET. ASSOCIATION.
Pres: Prof. James Macqueen, F.R.C.V.S. London, N.W.
Sec: Mr. William Hunting, F.R.C.V.S. London, S.W.
Treas: Mr. J. F. Simpson, F.R.C.V.S., Maidenhead.

NATIONAL VETERINARY BENEVOLENT & MUTUAL DEFENCE SOCIETY.
Pres: Mr. W. A. Taylor, F.R.C.V.S., Brick-st, Manchester
Treas: Mr. J. B. Wolstenholme, F.R.C.V.S.,
Quay-street, Manchester
Hon. Sec: Mr. G. H. Locke, M.R.C.V.S.
Grosvenor Street, Oxford-st., Manchester

NORTH OF ENGLAND V.M.A.
Pres: Mr. E. R. Gibson, M.R.C.V.S.
25 Marlborough-street, Seaham Harbour
Hon. Sec: T. T. Jack, M.R.C.V.S., 3 Elmwood Ter, Sunderland
Meetings, Third Friday, Feb., May, Aug. and Nov.

NORTH OF IRELAND V.M.A.
Pres: Mr. F. W. Emery, F.R.C.V.S., Belfast
Hon. Sec; Mr. J. S. A. Jordan, M.R.C.V.S., Belfast
Hon. Treas; Mr. J. A. Thompson, F.R.C.V.S., Lurgan

NORTH OF SCOTLAND V.M.S.
Pres: Vet. Capt. Clement Baxter, M.R.C.V.S., Elgin
Hon. Sec. & Treas: Mr. G. Howie, M.R.C.V.S. Alford, Aberdeen
Meetings, Last Saturday in January and August

NORTH WALES V.M.A.
Pres: Mr. R. S. Rowlands, M.R.C.V.S., Abergele
Hon. Sec. Mr. L. W. Wynn Lloyd, M.R.C.V.S., Carnarvon
Hon. Treas. Mr. R. Jones, M.R.C.V.S., Towyn, Merionethshire
Meetings, First Tuesday, March and September

ONTARIO V.A.
Pres: Mr. J. H. Tennent, V.S., London, Ontario
Sec: & *Treas*: Mr. C. H. Sweetapple, V.S., Toronto, Ontario

PROVINCE OF QUEBEC V.M.A.
Hon. Sec: Mr. Gustave Boyer, Rigand, P.Q.

ROYAL COUNTIES V.M.A.
Pres: Mr. P. J. Simpson, F.R.C.V.S.,
Strathmore House, Maidenhead
Hon. Sec. & Treas: Mr. G. P. Male, M.R.C.V.S.,
250 King's Road, Reading
Meetings, Last Friday, Jan., April, July and Nov.

ROYAL SCOTTISH V.S.
Pres: Mr. Reid, M.R.C.V.S., Auchtermuchty.
Hon. Sec:

ROYAL VETERINARY COLLEGE M.A.
Pres: Dr. Lander, D.Sc.
Hon. Sec: Mr. A. L. Sheather, M.R.C.V.S.
Assist. H.S. Mr. V. Pride Jones.

SCOTTISH METROPOLITAN V.M.S.
Pres: Mr. O Charnock Bradley, M.D., D.SC., M.R.C.V.S.,
Royal Dick Vet. College
Hon. Sec: Mr. A. Gofton, M.R.C.V.S., Ryl. Dick Vet. Coll.

SOUTHERN COUNTIES V.S.
Pres: Mr. W. Burt, Junr., F.R.C.V.S., Brighton
Hon. Sec: Mr. J. Alex. Todd, M.R.C.V.S., Worthing
Hon. Treas: Mr. E. W. Baker, M.R.C.V.S., Wimborne
Meetings, Last Thursday, Mar., June and Sept.

SOUTH DURHAM AND NORTH YORKSHIRE V.M.A.
Pres.: Mr. G. R. Dungeon, M.R.C.V.S., Sunderland
Hon. Sec: Mr. W. Awde, F.R.C.V.S., Stockton-on-Tees.
Meetings, First Friday, Mar., June, Sept. and Dec.

TRANSVAAL V.M.A.
Pres: Dr. Theiler, C.M.G.
Hon. Treas; Mr. J. M. Christy, M.R.C.V.S., D.V.S. Krugersdorp
Hon. Sec: Mr. J. G. Bush, M.R.C.V.S., Piet Retief, Transvaal

WESTERN COUNTIES V.M.A.
Pres: Mr. A. J. Down, M.R.C.V.S., Sampford Peveril
Hon. Sec. Mr. W. Ascott, M.R.C.V.S., Bideford
Hon. Treas: Mr. P. G. Bond, M.R.C.V.S., Plymouth
Meetings, Third Thursday, March, July and November

WEST OF SCOTLAND V.M.A.
Pres: Mr. Hugh Begg, M.R.C.V.S., East Kilbride
Hon. Sec: & *Treasr*: Jas. Macfarlane, M.R.C.V.S.,
75 West Nile Street, Glasgow
Meetings, Second Wednesday, May, Oct. and January.

YORKSHIRE VET. ASSOCIATION
Pres: Mr. H. G. Bowes, F.R.C.V.S., 106 Clarendon-rd, Leeds
Hon. Sec; Mr. J. Clarkson, M.R.C.V.S., Garforth, nr. Leeds
Hon. Treas: Mr. A. McCarmick, M.R.C.V.S.,
Kirkstall-road, Leeds